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# The recovery of PNL

A year ago the Polytechnic of North London was *in a condition of* permanent crisis. Student demonstrations about the presence of a National Front student, Mr Patrick Harrington, were succeeded by legal confrontations which in turn generally provoked further disorder in a cycle of despair that seemed to be endangering the very existence of the institution. The directorate appeared powerless to command events; the staff was demoralized; both members and officers of the Inner London Education Authority were increasingly anxious and angry, but reluctant to intervene for fear of making the situation even worse. PNL was drifting towards disaster – and no one seemed to know how to change the polytechnic's fatal direction.

Today PNL is in the middle of a successful recuperation, or for its critics rehabilitation. The former director has gone on sabbatical leave before taking early retirement. A vigorous director has been imported by the ILEA. The Harrington affair has been defused. The management of the polytechnic has been reorganized. *The morale of both staff and students* is immeasurably higher.

This remarkable recovery is amply confirmed in yesterday's report of the inquiry into the management of the polytechnic which was set up by the ILEA in January. It says: "Despite its media image, it is an institution which can take pride in much solid effort and some valuable innovations; it musters a great deal of talent and goodwill among its members and, although management processes start with something of a handicap, good progress in the right direction has been made this year."

Clearly in these circumstances the important thing is to look forward to a more hopeful and settled future rather than back to a troubled past. An attack of collective amnesia would be of great benefit to PNL. The report acknowledges as much: "Given a suitable new director and progress in these comparatively straightforward ways, the committee sees no reason why the polytechnic should not contend successfully with the challenges which arise from its own defined purposes and clientele and from the policies of both the authority and central government. But, to do so, it and all its members must reject once and for all any notion that it is a prisoner of its past or of its public image."

But before considering the polytechnic's much brighter future, two points deserve to be made about the past – the past nine months of recovery, not the previous years of disorder, confusion and demonic myth. The first is very simple. If so much positive progress can be made in less than a year, PNL cannot have been in such a terrible condition. It is *important to emphasize* that the polytechnic has now demonstrated an underlying strength and quality that *previously were obscured* by its spectacular but also superficial troubles.

The second is that the ILEA was right to intervene when it did. Maybe the authority should have moved at an even earlier date. Far from being an *irresponsible intervention by a local* authority in the internal affairs of a polytechnic, the growing concern and impatience of the ILEA's members and officers and the final decision by the ILEA leader, Mrs Frances Morrell, that enough was enough have been amply justified by subsequent events. Put quite simply, if the authority had not intervened, PNL might not have survived. So far from being criticized for intervening the ILEA should be praised for rescuing an important and valuable institution from the threat of demoralizing dissolution.

The others who have played a crucial role in the rescue of PNL also should be recognized. Dr John Beishon, the acting director, left be*hind a secure and settled* base at the Polytechnic of the South Bank to take on what looked then like the most vicious job in British higher education. He took a big risk that most of his peers would have avoided; but he, and PNL, have won. Finally of course the three members of the committee which has just published its report also deserve to be thanked most warmly particularly Miss Sheila Browne, former senior chief inspector and now principal of Newnham College, Cambridge.

The most important message of the report is simple. The polytechnic must, and can, make a new start. It must shake off any remaining fatalism, any lingering belief that the problems facing PNL are insoluble. There has to be an end to the exaggerated politicization of the past, and to *the unprofes*sional behaviour of those (mainly on the right but also on the left) who have used political networks rather than polytechnic procedures to express their discontents. A sense of common *purpose must be recovered, or possi*bly discovered, at PNL.

The committee places great emphasis on the role the new director can play in this remoralization of the polytechnic, and believes that personal qualities and managerial abilities may be more crucial than academic reputation in making this key appointment. But Miss Browne and her colleagues recognize that the future of PNL cannot be entrusted simply to an effort of collective will to make a new beginning and the managerial charisma of the new director. The committee identifies shortcomings in the operation of the polytechnic, which have to be put right if PNL is to make a full and permanent recovery.

The verdict of the Browne committee is that PNL has not been well managed, although substantial improvements have been made since the arrival of Dr Beishon. Formerly the scattered sites of the polytechnic felt *little common sense of identity* and the senior management had been unsuccessful in developing the polytechnic*wide unity that was so badly needed.* There was "a tangle of committees and a plethora of procedures" but also an *impression of powerlessness, a strong* belief that decisions were taken elsewhere. Communications within the polytechnic were poor; the committee notes that for most staff "the working of the NAB was a complete mystery".

The report is also critical of the role played by the court of governors, although it recognizes that inevitably the court got sucked into the vortex of PNL's troubles by the managerial vacuum that came to exist. The students' union is criticized for being unrepresentative, but so too is the former directorate for seeming to regard all student activists as enemies of the polytechnic. The committee also *regrets the PNL habit of regarding as* "unwelcome intruders" external bodies like the ILEA, its inspectorate, *Her Majesty's Inspectorate*, and the Council for National Academic Awards, with which there should be a natural and positive relationship.

The Browne recipe for PNL's successful recovery therefore is fairly straightforward – a more coherent management in which each part, court, directorate, academic board, faculties and departments, has a clear role; better communication within the polytechnic and, a more difficult task, the restoration of mutual trust or at least toleration; and the breaking down of that ethos that has been crippling PNL's success, introverted, politicized, paranoid and fatalistic. The *aim* is very simple; to let hope stream in.

One question mark remains: will those outside PNL who have taken such a close interest in its troubles be able to forgot as easily as those within the polytechnic who are already rebuilding the polytechnic's reputation? PNL has powerful enemies with long and bitter memories and no stake in its future success. PNL is also lodged in the media's capricious file of vicious stereotypes. One hopeful sign however is that the Department of Education and Science did not choose to give evidence to the Browne committee (although interestingly the inspectorate did). So there can be no possible intellectual or moral justification for the DES reopening its powerful fire on the polytechnic. PNL deserves to be left in peace to complete its recovery, and there is at least a fair chance that it now will be.

## Laurie Taylor

*The Committee of Vice Chancellors and Principals has called for incentive awards for academics who can demonstrate a particularly high level of performance.*

THES, *September 13.*

**Ladies and gentlemen, as your vice chancellor and president, may I welcome you to the Second Incentive Award Ceremony. I turn first to the £500 Academic Pentathlon Prize. The clear winner for last term is Dr Lafitte of Human Geography who scored maximum points in all five sections. In the *Lecturing Division* he delivered all 36 of his lectures at the right time and the right place with no overall waffle rating of only 14, while in *Student Relations* he marked a total of 240 student essays, returning each one within 48 hours of its submission – a performance which I must say stands in stark contrast to *the university average of eight-and-a-half months.***

**In *Administration* he accepted the onerous role of chairman of the Departmental Committee to Establish Who Was Using the Photocopier Without Paying (typically enough it turned out to be the Psychology Department), and also served on the following committees which all carry the very highest points rating:**

**● The Town and Gown Liaison Committee;**

**● The Inter-University Shared Equipment Committee;**

**● The Library Users Committee.**

**Finally, his top score on *Social Welfare* came from his conscientious involvement in the Dial-a-Don-Help-*line (the new all-night* counselling service for top-of-the-scale lecturers) whilst his A-plus in *Extra mural activities* was well earned by an unbeaten 53 for the Vice Chancellor's XI in their semi-final victory over the Combined Youth Custody team. A true all-round performance. Ladies and gentlemen – Dr Lafitte!**

*Prolonged applause.*

**And now to the Special Incentive Award for the Fastest Coverage of a Major Academic Area. This goes for the second term running to Dr Lockwood for her splendid 122-minute course *entitled From Plato to Heidegger.* This beat by a mere three minutes a fine attempt by Dr Kunnis with *The Physical Nature of the Universe.* But matters would certainly have been closer if Dr Kluzis had not got a little tangled up with Heisenberg Ladies and gentlemen – Dr Lockwood!**

*Loud cheers.*

**And finally our Don-of-the-Month Award for the academic who has been most successful in marketing their own course. The clear winner here is Dr Kellenberger whose three-term anthropology course entitled *Lappish Bear Graves in Northern Sweden* has now moved up from number 226 in the university charts to number 33 following Dr Kellenberger's brave and well-publicized decision to deliver the entire course while dressed up as a dancing bear. Well done indeed. And here is the marketing director to present you with the traditional one gallon bottle of medium dry sherry. Dr Kellenberger!**

*Scarves and hats waved aloft. The president exits left to the strains of* Here We Go.


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# The demand for graduates

Two pages of the Green Paper were devoted to those now familiar, depressing graphs which show student demand plunging in the 1990s. The battle has been raging for two years over the accuracy of the projections. But nowhere in the Green Paper or elsewhere have the planners plotted an equally important graph, whose rising curve should be playing a crucial role in the debate over the future size of the higher education system. That graph, were it ever to be attempted, would deal with the demand for graduates: the very stuff of the Green Paper.

*In defence of those who drafted the* Green Paper, it is only fair to admit that an accurate picture of the demand *for graduates would be almost impossi*ble to produce. The complexities of economic forecasting, the definition of graduate-level jobs and a host of other difficulties would make projections even more controversial than those for student demand. However, it is safe to say that the Government will not be sorry to be spared the exercise since any reasonable extension of current trends, would be bound to produce *responses [illegible] for supply and demand* which are set on a collision course.

There may be disagreements on the detail of future requirements, but *employers* and careers advisers agree that serious shortages of graduates are likely even before the real decline in student numbers is expected to take effect. It is obvious already that teaching (on the mathematics and science side especially) is in danger of failing to meet its recruitment targets, and the high-technology industries are also likely to want more graduates than they can get.

The Standing Conference of Employers of Graduates is making out its own estimates of future requirements, but there is little sign as yet of the impending difficulties causing any rethink of Government policies. The £43 million "switch" initiative is expected to cope with high technology demands and the rest presumably have to compete for a smaller pool of graduates. Manpower planning is out and student demand is to be managed according to the taxpayer's ability to pay.

Such an approach is perhaps not unexpected from a Government deter*mined to hold down public spending*, but it is inconsistent with the stated policy of tying higher education more closely to national economic needs. It is not a matter of sustaining the cultural heritage, which the Green Paper warns must be paid for; it is a question of ensuring the supply of expertise necessary to make economic recovery a reality.

Ministers might decide, quite reasonably, that many of the jobs now being filled by graduates could be done adequately by less highly qualified people, as they used to be. They might even believe that the outlook for the economy was too bleak to justify the investment involved in increasing the supply of graduates, although the recent improvement would appear to be linked more to the changing character of employment than to any transient economic recovery. They surely must address these questions, however, in their deliberations on next year's White Paper on higher education. As more people inside higher education begin to recognize the significance of the jobs boom, they will be

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# Labour unveils spend and mend charter for HE

by David Jobbins

Labour's education team is to announce a multi-million pound package for higher education later this year with the aim of rescuing universities and colleges from the damage inflicted by Government cuts and transforming the system into an instrument for social reform.

The charter for higher education, which the party intends to launch in late November or early December includes:

● Level funding for the universities with special attention given to repairing the damage of past and planned cuts;

● Extra resources for polytechnics and colleges to boost the amount per student to the same level as the universities;

● A comprehensive package of student financial support, including restoration of the value of the grant for higher education students, eventual abolition of the parental contribution, and educational maintenance allowances of £27 per week (at current prices) for all post-16 students whether at school or college.

The programme being prepared for final approval by the national executive implies extra spending on higher education under a future Labour Government approaching £1,000 million – mostly on student support.

But Labour leaders are adamant first that there are priorities within the planned programme, and that the level of spending would depend on the prevailing economic and political imperatives of *up to two and a half years* ahead.

Secondly they have not diluted their often-voiced view that universities in particular will have to "earn" extra resources by adapting their patterns of education and management to meet the needs of a greater section of society than at present.

The first shot in Labour's attempt to win the hearts and minds of the higher education community will be fired next week when education spokesman, Mr Giles Radice, launches "Higher Education for the Labour Party" as a channel for communication and pressure.

But the main thrust will come with the charter, the latest in a series being launched by the party on specific themes. The watchword will be the provision of "sufficient resources to repair the damage inflicted on higher education over the last few years and restore the quality of teaching and research".

Previous commitments from the party have implied meeting the University Grants Committee's request for level funding and the National Advisory Body's parallel demand for more resources to enable the public sector to end its inbuilt disadvantage.

Now it seems that Labour leaders have reacted to pressure from the teaching unions to recognize that by 1987/88 after 2 per cent per year of cuts, the universities will need more than level funding, and that the public sector deserves parity in the unit of resource calculation.

Simply to restore the 2 per cent cut could cost £50 million if the process was reversed after the next general election, while giving the public sector parity of funding per student would add a further £53 million.

Commitment to the principle of a common unit of resource is the result of tough lobbying by the public sector. Mr Radice said: "We have seen some very strong arguments put forward for this . . . The universities fear this will mean levelling down but this is not our intention."

But the heaviest costs will fall on student support – with top priorities attached to restoring the value of the grant, returning to reimbursement of travel costs, and the introduction of a revolutionary scheme of means-tested educational maintenance allowances (EMAs).

EMAs would cover 40 weeks of the year at an annual net cost of £474 but this would be reduced to a yet-uncertain level by a means test.

The cost of restoring the grant to its 1978/79 value would be £110 million, with a further £23 million on travel costs, bringing the total package to £861 million – double the present level of spending. But within this abolition of the parental contribution at a cost of £252 million would have a low priority.

Labour leaders accept it will not be easy to sell the package to a future chancellor of the exchequer, and are to appeal to the higher education community for change in response to social needs in exchange.

Mr Radice said: "What we have to do as a party is to balance the needs of higher education against other educational needs such as nursery education or improving quality in primary and secondary schools, and in the Youth Training Scheme.

"But to the extent we can increase working class participation in higher education, it will be much easier to argue inside the Labour Party for more resources."

# Ministries tussle over research cash

by John O'Leary and John Turney

A four-way tussle over research funding is under way in a Cabinet committee and could see millions of pounds transferred to university projects.

The main target is the Ministry of Defence's £380 million research budget, which both the Department of Education and Science and the Department of Trade and Industry had hoped to raid in last year's public spending round.

Although those designs came to nothing, new talks taking place as part of the annual review of research and development are said to be "more *full-bloodied*". Since bilateral talks between the Treasury and the various spending departments are well advanced, it is unlikely that the balance of funding will be altered in the coming year, but there is strong pressure for longer-term change.

It is understood that a switch of a proportion of MoD funds has the backing of the Prime Minister. Another Cabinet committee expressed doubts about the effectiveness of some defence research earlier this year.

The MoD recently announced its own plans to increase sponsored research in the universities from £9 million to £15 million, but the move has not reduced the likelihood of a transfer of resources. Both it and the Ministry of Agriculture and Fisheries would be probable losers in a redeployment of funding.

Sir Keith Joseph, Secretary of State for Education and Science, had made known his concern to increase the science budget on a number of occasions, most notably in attempting to transfer £39 million from student grants. But he will encounter stiff competition from the DTI for any money trimmed from other departmental budgets.

One of the points at issue in the current talks is the long lead-time of much of the work sponsored by the research councils. The generally quicker return offered by DTI projects may constrain the size of any reallocation to the DES, although the talks have not reached the stage of negotiation over figures.

**Mr Bruce Holdsworth, secretary of the new National Art Education Archive, based at Bretton Hall College, Wakefield, displays one of the centrepieces of the archive, which brings together work from eight collections. The cupboard pictured was painted by pupils of Marion Richardson, the pioneer art teacher and inspector of the interwar years.**

# Clerical pay offer set to improve

Vice chancellors have opened the door to a higher pay offer to university *clerical staff and technicians – but any* breakthrough on academic salaries is to await crucial talks on funding with Sir Keith Joseph, Secretary of State for Education.

Following the vice chancellors' discussions during their residential meeting in Leicester this week, negotiations have been fixed with the technicians for October 9 and with clerical staff for October 17.

But any increase in the offer, currently 4 per cent, is likely to be small. Vice chancellors are looking at settlements elsewhere, in the health service of 4.5 per cent and the civil service at 4.9 per cent, as indications of what similar employers can afford.

Both groups are said to have been angered when the universities agreed to pay 4 per cent on account to academics, essentially to avoid higher national insurance contributions which come into effect early next month, but decided against doing the same for the lower paid ancillary workers, most of whom would not be affected.

No date has been fixed for a meeting between the vice chancellors and Sir Keith, and before that occurs, there is no likelihood of a meeting either of Committee A, or of the negotiating body for clinical academics, both of whom were due to settle their claims last April.

The executive of the Association of University Teachers meets today to review the position, with members already angered by the vice chancellors' approach to Sir Keith on structural reforms and possible differential salaries between *institutions within* national frameworks. Industrial action was likely to be discussed, but union leaders will be reluctant to force early negotiations which could lead to an imposed award.

There are clear indications that college lecturers are accepting a phased offer of 5 per cent from April 1 and 2 per cent from December 1 coupled with the prized automatic transfer from the top of the lowest salary scales.

A special salaries council of the main union meets on Monday, but already an overwhelming majority of branches of the National Association of Teachers in Further and Higher Education registering their decisions with national officials have voted to accept.

Of more than 100 of the union's 770 branches voting so far only 5 have *rejected the deal, despite recom*mendations from a number of regional executives and advice circulated by the union's Broad Left group.

The voting pattern so far calls into question the authority of the Broad Left within the union as a vehicle for transferring the views of members and an expected decision on Monday to accept will prove a bitter political debate.

# V-cs write a 'Green Paper'

by Peter Aspden

Vice chancellors are thinking of producing their own "Green Paper" on *higher education in response to the* Government's recent document, it was revealed at their annual residential *meeting held in Leicester this week*

Sir Keith Joseph, the Secretary of State for Education and Science, was due to make an unprecedented appearance at the meeting yesterday underlining the urgency of the situation in which *universities find them*selves.

Vice chancellors have made no secret of the fact that discussion of the Green Paper was likely to dominate proceedings over the three-day meeting, which opened on Wednesday.

That means that little time will have been spared on other pressing issues such as the Jarratt inquiry on efficiency, the role of the University Grants Committee, research selectivity and salaries, which combined to produce the longest – and most complicated – agenda vice chancellors have yet had to face.

The Committee of Vice Chancellors and Principals is following up the residential meeting with a special one-day open conference in London next month to further discuss the Green Paper.

# HMI slates 'indulgent' architecture courses

by Adriana Caudrey

Architecture courses at polytechnics and higher education colleges must be urgently reviewed because they are wasting money, are over-indulgent and out of touch with the working demands of the profession, HM Inspectors said this week.

This is the second time architecture schools have come under fire in the last six weeks.

The attack follows a recommendation contained in a report by a joint working party appointed by the National Advisory Body and the University Grants Committee the one university and three polytechnic and architecture schools should be shed, and a handful of others merged. This will cut admissions by at least 18 per cent.

Now the inspectors accuse architecture schools of making it too easy for architecture graduates to get on to the two-year diploma course which follows a year in professional practice.

They say: "It is hard to justify the lack of quality bar in the progression of student architects from degree to diploma on educational grounds . . . given that a full course of study in architecture involving five years in a college is expensive when compared with most other disciplines."

They suggest that the full-time two-year diploma course should be replaced by continuing part-time study, as adapted by other similar professions. "It is not at all clear why architecture has felt the need for such a different system," they say.

They also criticize architecture schools for being idiosyncratic and out of touch. They say that architecture schools alone have failed to create links with other technological departments.

They also say that the treatment of


continued on page 3

**The Great Purges, 17**

Don't walk before me, I may not follow,
Don't walk behind me, I may not lead,
Just walk beside me, and be my friend.

**That piece of advice by Albert Camus is one of the many items in Mary O'Hara's latest book *Celebration of Love* which is a collection of her favourite prose and poetry. With ample opportunity to read as she travels around the world she marks passages that appeal to her because they are well crafted, or beautiful, or witty, or cast a new light on familiar or stale truths. The result is a testimony to the imaginative breadth and occasional eccentricity of a lively mind.**

**Mary O'Hara plays the harp and sings her own and many other songs. She is a troubadour. Her presence on the stage creates a serenity that is quite exceptional. Her husband, the poet Richard Selig, died within 15 months of their marriage (some of his unpublished poems are in the book) and Mary, after singing for a few more years, entered the Benedictine monastery of Stanbrook (best known for the correspondence between a former Abbess and Bernard Shaw) and stayed there for 12 years. Her return to civilian life was announced with a concert in the Festival Hall and she has never looked back. Now she has married again and I pray for their happiness.**

***The Scent of the Roses*** **was the title of her autobiography.**

**The theme of the new book is Love, which you may sometimes think is overrated but will change your mind when you dip into the book. It is tempting to quote poetry, but I think some of the prose is better. She quotes Nietzsche that the growth of wisdom can be judged accurately by the decline of ill-temper. On that basis she is one of the wisest people I know. And she has chosen some unusual and devastating pieces, like Chief Seattle's letter to the President of the United States in 1885. "There is no quiet place in the white man's cities . . . And what is there to life if a man cannot hear the lovely cry of the whippoorwill or the argument of the frogs around the pond at night?"**

**The most profound piece is from Victor Frankis *Man's Search for Meaning* – his recognition while stumbling from the concentration camp that "love is the ultimate and the highest goal to which man can aspire" and that "the salvation of man is through love and in love". His wife died in one of the camps, but he still spoke to her: "set me a seal upon thy heart, love is as strong as death".**

**But Mary also bubbles with laughter and not surprisingly quotes Bernard Shaw that "seriousness is a small man's affectation of greatness". She makes her own comment that laughter quickly pricks the bubble of affectation.**

**So let me end with my wife's favourite poem, by Lord Dunsany:**

**'And were you pleased?', they asked of Helen in Hell.**
**'Pleased?' answered she, 'when all Troy's towers fell;**
**And dead were Priam's sons, and lost his throne?**
**And such a war was fought as none had known;**
**And even the gods took part; and all because**
**Of me alone! Pleased? I should say I was!'**

**Patrick Nuttgens**

# letters to the editor

## Dilemma for extramural studies

Sir, – I am writing in response to the comments by Mr Noel Thompson, under-secretary at the DES, about the responsible body work of extramural departments (*THES*, September 20). Departments such as my own have, for many years, done in good measure all the good things that Mr Thompson now advocates and I totally reject his criticisms.

Your report did not go on to mention the considerable irony contained in Mr Thompson's comments. It was only 12 months or so ago that this same civil servant was closely involved in framing the so-called "formula" for responsible body funding which is now hindering many extramural departments, including my own, from achieving just those educational results that both he and I want.

In the same address, extramural departments were criticized for not taking mature students on degree courses. Mr Thompson does not appear to realize that decisions about entry to degree courses are almost always made, quite properly, by the subject department concerned. I happen to agree with Mr Thompson that the number of mature students should increase, but he was aiming for the wrong target by criticizing extramural departments for the present position. (To alleviate this problem some extramural departments, including my own, offer courses to assist mature students registered for London external degrees. None of us would claim though that this is enough.

Finally, following the visit by Mr Thompson to one North American university, we are told that American continuing education provides the model for British extramural departments of the future. As someone who has visited more than one American continuing education department, I have no doubt that the best British extramural departments work within a system superior to that in the United States.

What should we think of a critic who helps to set up a system that hinders the achievement of the aims he advocates? And who criticizes us for not doing something which he should know it is not generally in our power to do? And who draws simplistic conclusions on the basis of an extremely limited experience? I would not claim that any extramural department was perfect. We are good enough, however, to expect that, if criticisms are to be made, they should be less confused and better informed than this.

Yours faithfully,
E. J. THOMAS,
Director of Extramural Studies,
University of Bristol.

Sir, – After returning home last Friday from a DES course at Oxford on "Responsible Bodies: Problems and Issues" which I (and I think most participants) thought was an opportunity for a "full and frank exchange of views", I was more than a little surprised to read a summary of the opening address by the under-secretary at the DES in the *THES* headlined "Extramural rap from DES".

Mr Noel Thompson's remarks were indeed their usual mixture of challenge, provocation and sharp analysis and they were listened to attentively by all present. There was considerable agreement with much, if not all, that he said, and his contribution provided valuable material for consideration later in the course.

What your report does not make clear was that the session consisted not only of the talk by Noel Thompson but also what the chairman described as "talk-back", in which one extramural director after another explained to Mr Thompson that his perception of the current work of university adult education departments is misguided, based it appears on outdated experience and partial information.

The "talk-back" should have left Mr Thompson in no doubt that university adult education departments share many of his objectives but do not believe that the DES always knows the best ways of achieving them. In particular, it was emphasized that the new DES funding formula, with its obsession with crude quantity assessment and market competition between universities, will inhibit many of the aims which we share with Noel Thompson.

Yours faithfully,
ROGER FIELDHOUSE,
Senior Lecturer,
Department of Adult and Continuing Education,
University of Leeds.

## Power of US scholarship

Sir, – It is a pity that Professor Walsh (*THES*, September 20) devoted only one sentence to ancient philosophy in his survey of the state of classical studies. The tendency to relegate this to a specialist sideline as far as classicists in this country in general are concerned may have something to do with the increasing predominance of American scholars (and British expatriates) in the field which Professor Walsh rightly detects. Moreover, much of the interest in America has in the past been in philosophy rather than in classics departments; the implications of such a trend here are the more worrying given the highly departmentalized nature of some British universities. (Oxford has always been a special case where this issue is concerned.)

The conversion of ancient philosophy, as far as classicists are concerned, to a specialist option for classics students taught entirely by members of philosophy departments would be beneficial neither for classics as a whole nor for ancient philosophy in particular; the ethos of a philosophy department, and the main interests of its staff and students, are necessarily rather different from those of students of antiquity (which is not to say that both cannot learn from the other).

For the record, the major growth area in the study of ancient philosophy in recent years has not just been in the still rather esoteric world of Neoplatonism, but in all areas of post-Aristotelian philosophy.

Yours faithfully,
R. W. SHARPLES,
Department of Greek,
University College, London.

## Discrimination

Sir, – Martin Colman's article (*THES*, September 13) reminded me of my daughter's experience when applying to universities and polytechnics this year. She and her friend, having similar O level results and school experience, applied for the same courses at the same institutions. One university offered conditional places to both, without interviewing either, but demanded higher A level grades from my daughter than from her friend; and one polytechnic rejected my daughter while accepting her friend.

Elsewhere, the offers were comparable, so that I assume that school reports were equally favourable to both girls. The only difference that I could pinpoint was that my daughter has an obviously Asian name.

It seems to me a pity that Martin Colman assumed that any racial discrimination in admissions procedures would be accidental, and did not address himself to the possibility that, in some institutions at least, it could be deliberate.

Yours faithfully,
SYLVIA QURESHI,
121 Crabtree Lane,
Bromsgrove,
Worcestershire.

## Reply to Right

Sir, – I have only just had an opportunity to read Dr Levy's letter (*THES*, September 16). In response to his somewhat emotive comments about the meeting of the sociology section of the British Association may I make the following points in reply:

1. The programme for the association was published some months in advance of the meeting and the subject of my address was known for nearly a year. The sessions were open to all who wished to pay the conference fee.
2. No one left half way through to write a newspaper article suggesting that the New Right should be a target for special investigation.
3. The discussions focused on the published work of the New Right and, not on fabricated newspaper accounts of their activities.

The meeting was an attempt to engage seriously with the New Right on the level of ideas, and had any of the New Right been in attendance their views would have received the same careful and courteous consideration as others, according to the conventions of civilized academic discourse.

Yours sincerely,
ROBERT MOORE,
University of Aberdeen.

## Evolutionism

Sir, – In his review of Jean-Pierre Changeux's *Neuronal Man: the biology of mind* (*THES*, August 23), Stuart Sutherland writes that "despite the dramatic progress in our understanding of the brain . . . the goal of explaining the human mind remains as distant as ever". May this not be because we cannot leap straight from biology to such concepts as consciousness and mind?

Ernst Mayr, doyen of modern evolutionists, made a fundamental distinction between functional biology (physiology, biochemistry etc) and evolutionary biology (which has the whole of life for its province). Is not the emergence of animal intelligence an evolutionary topic? And is it not generally accepted that language is the key factor in the emergence of a distinctively human intelligence: rational thought, theoretical understanding, mind?

If so, what we need is an evolutionary theory of the antecedents, origin, and semantic principles of language. In his *Principles of Language and Mind* T. P. Waldron has provided such a theory. Is it not time we stopped trying to study meaning and mind in the physiology lab.?

Yours truly
IAN SINCLAIR,
69 Carlyle Road, Cambridge.

## Alma's alma mater

**Sir, – I enjoyed the even-handedness with which you illustrated Alma Evers's eulogistic article describing her term as a Fellow of Keble (*THES*, September 20) with a photograph of the New Court at Corpus Christi College, Cambridge.**

**Yours truly,**
**PETER WILLIS,**
**Newcastle upon Tyne.**

## Civil liberties

Sir, – Further to the piece in Don's Diary (*THES*, September 20), the sabbatical officers of the University of Sussex Union would like to reaffirm its total support for Sussex NCCL in its investigation into the university's disciplinary procedures. The students' union has consistently refused to accept academic discipline for non-academic offences.

This year first years registering as students will again be obliged to sign a declaration abiding by the university's disciplinary procedures. In effect, this removes the rights of free speech and action, as at its discretion the university management can impose their view of "legitimate" political protest and arbitrarily punish individuals. We are convinced that the student disciplinary panel is an infringement of civil liberties at Sussex University.

Yours faithfully,
TY GODDARD, Valerie Mainstone, Sally Hunt, Dominic Lees, Paul Bish,
University of Sussex Union.

**Letters for publication should arrive by Tuesday morning. They should be as short as possible and written on one side of the paper. The editor reserves the right to cut or amend them if necessary.**

## Sums check

Sir, Among the commotion over the possible closure of schools of architecture, nobody has checked the University Grant Committee's sums.

There were 28,244 UK-registered architects in 1983. The Esher Report believed (erroneously) that this number would grow to more than 32,000 in 1992 and wanted to stabilize the size of the profession at that level. The Architecture Intakes Working Party has set a limit of 700 p.a. intake to Part 2 architecture courses.

Even if all these students eventually registered and then all worked for 40 years (i.e. to age 65+) this would in the long run produce a profession of only 28,000 architects. Dropouts and earlier retirement would reduce this figure to well below 25,000. The decline would set in almost immediately because Esher overlooked a bulge in the age profile which will soon greatly increase retirements from the profession.

Perhaps we do not need to close any schools of architecture!

Yours sincerely,
P. D. HUDSON,
Department of Applied Mathematics and Theoretical Physics,
Queen's University,
Belfast.

## Slave labour

Sir, – What would have been Professor John Roberts' reaction to an essay submitted by one of his farmer students at Southampton about life below the Mason-Dixon line, prior to the American Civil War that did not mention the presence of slaves? The second instalment of his television series "Triumph of the West" dealt mainly with ancient Greece without even a reference in passing that it was based on slavery.

PETER BERLINER
110 Guilford Street, WC1.

## German teaching

Sir, – I am trying to help a German colleague who is making a particular study of the teaching of German in England. Can any of your readers supply information about when and where German was first introduced into schools or universities in this country? As a point of departure for further research this information would be most helpful.

Yours truly,
J. H. HIGGINSON,
12 St. Lawrence Forstal,



# MacDowall hits back at Browne report

by David Jobbins

A firm declaration that National Front activist Patrick Harrington was entitled to continue his studies at the Polytechnic of North London would have defused the escalating crisis, the polytechnic's retiring director said this week.

Dr David MacDowall, who is taking early retirement from PNL, criticized the independent report published last week for failing to tackle what he regards as the key question of why the Inner London Education Authority shied away from making an unequivocal statement on Mr Harrington's rights.

He resisted the criticism of management in the polytechnic identified as the root cause of the crisis in the report carried out by Miss Sheila Browne, principal of Newnham College.

Putting the blame firmly on ILEA's senior politicians, Dr MacDowall said:

"The view the polytechnic took from the word go was that it was axiomatic that no-one should have any action taken against him because of his views, but that he was liable if in any way he breached the institution's rules and regulations.

"The report is wrong in suggesting this principle was subscribed to by the ILEA. I have evidence that from May 1984 ILEA put extreme pressure on me to exclude Mr Harrington simply because of his views.

"I find this evidence has not been either taken much note of or followed up by the inquiry."

He claimed that in early May 1984 a senior officer had told him of his recommendation to Mr Neil Fletcher, chair of ILEA's further and higher education committee, that Mr Harrington should not be treated differently from a student who belonged to the Socialist Workers Party.

"He said a letter was to be sent from the leader of the authority indicating that Mr Harrington was entitled to be educated provided he did not breach the rules of the institution.

"But no such letter was sent . . . On May 14 the officer changed his tune and urged me to exclude Mr Harrington from the polytechnic."

Dr MacDowall denied the suggestion that the polytechnic management had been supine about the impending crisis. Complaints by students about Mr Harrington's presence had been thoroughly investigated but no evidence found of a breach of the rules. A complaint by Mr Harrington against the protestors was stymied when some staff refused to identify students for internal disciplinary action.

It was at this stage that Mr Harrington resorted to the courts. The governors took the view that the principle of double jeopardy precluded any internal disciplinary action.

He believes that a statement from ILEA would have isolated the SWP activists, both in the polytechnic and outside and secured the collaboration of staff.

Miss Browne said last week the report was not intended to point the finger at one person, but was a criticism of the entire management.

Patrick Harrington said on Thames Television that he hoped the report separated Dr MacDowall, "who did his best", from the court of governors.

# Staff protest against adult studies move

Plans for a restructuring of adult education in Surrey have met with bitter resistance from staff.

A proposal to dispense with the existing 12 local adult education institutes and create four new adult education colleges is to go before the county's education committee next week.

A crucial meeting was today being held between institute principals who have vehemently opposed the plan, and the steering committee responsible for its design.

Principals and chairmen of management committees at all 12 institutes have unanimously rejected the scheme. Staff, who are contesting its implementation through the National Association of Teachers in Further and Higher Education, have demanded detailed consultations, and are considering a ballot on industrial action.

A report drawn up by the principals is being presented to members of the steering committe. The report warns that implementation of the new plan is likely to cost an additional £155,900 over three years through staff reorganization, administrative changes and loss of student fee income.

The principals argue that at present adult education provides a highly localized service, and has been so successful that it has acquired a national reputation.

They fear the new scheme will sever grassroots links and make the service more remote. They argue that as a result student numbers will drop, and the revenue from fees will be dramatically reduced.

The principals have called on the steering committee to consider a comprehensive review of adult education, while retaining the existing structure for the next three years, and the introduction of new techniques to boost fee income.

Under the steering committee's proposals a new staffing structure would involve the loss of eight posts from the adult education service. Four new principals would be appointed to head the new colleges, and the post of vice principal would be created at each institution.

# Senate quashes v-c's plan

by Peter Aspden

The senate of Brunel University has effectively quashed a radical plan by the vice chancellor, Professor Richard Bishop, to make individual departments more responsible for running their own budgets.

Professor Bishop's plan, unveiled in July, urged that all university departments made up any financial shortfall within two years, or faced possible closure.

The proposal was one of a number of Jarratt-type recommendations which he hoped to see adopted within months to enable Brunel to cope with threatened funding cuts over the next few years.

But in a stormy senate meeting, lecturers told him that the plan went too far in too short a space of time. They rejected a bid to implement the proposals within three months, and instead set up a working party to investigate ways of increasing external funding.

The university's Association of University Teachers official, Mrs Lisanne Radice, said she welcomed the vice chancellor's objective in seeking to maintain overall funding rather than contemplate closures and cutbacks.

"But these particular proposals would have had disastrous consequences on academic standards and the cohesiveness of the academic community," she said after the meeting.

She also added that the plan's implications for the university's contractual obligations to its staff had not been properly thought through. The working party would look at means of increasing external funding in a deliberate and considered manner, she said.

Professor Bishop's plan, which he admitted represented a "high risk policy", was the most radical administrative shake-up of a university produced so far in the wake of the Jarratt committee recommendations on efficiency.

Its most controversial element was the treatment of departments as small businesses, which could share the task of earning extra funds among members of staff and monitor their performances.

Professor Bishop said when launching the plan that if the university spurned it and continued on its present course, his prediction was "at worst bankruptcy and, at best, a total loss of the pride and the fun of scholarship, in teaching and research."

**A trio of vice chancellors turned up at Lancaster University's Graduate Association reunion weekend, at which a portrait of one of the men, Sir Charles Carter (left) was unveiled. Sir Charles, who left in 1979, was joined by the present vice chancellor Professor Philip Reynolds, (centre) who retires this month, and his successor, Professor Harold Hanham (right).**

# Architecture under fire

continued from front page

technology is a controversial and unsettled issue in almost all the schools. The development of creative talent is encouraged to the exclusion of any emphasis on technology and economics.

When technological subjects are presented they tend to either to be treated at too advanced a level or else superficially, so that the students find them boring and irrelevant. Many students apparently pass through the colleges without gaining any grasp of building science, practical construction technology and economics which are crucial aspects of design work.

The inspectors highlight "an element of indulgence" in the treatment of contextual studies. They say the lectures and slide presentations are costly and time-consuming, yet the students do not bother to take notes. They are allowed merely to "absorb atmosphere" and develop "an architectural personality".

They are also disturbed by the extent to which students are permitted to work from home in semi-isolation. Although they recognize that many of them are able to produce good work in those conditions, they point out that the practice is wasteful of physical and staffing resources in the college and deprives students of the chance to compare notes.

# Scientists attack cuts as 'act of vandalism'

by Jon Turney
Science Correspondent

Britain's particle physicists met in London this week to reaffirm their opposition to the Kendrew committee's recommendations to cut funding for their subject – which they called an act of scientific vandalism.

Over 100 physicists gathered at Imperial College and agreed a resolution criticizing Sir John Kendrew's report on British participation in particle physics. The report called for a 25 per cent cut in Britain's payment to the European Centre for Nuclear Research (CERN) in Geneva by 1990, and a similar cut in domestic spending.

The resolution will be sent to Sir Keith Joseph, secretary of state for education and science, who is now considering the committee's report.

Professor Tom Kibble of Imperial College, who convened the meeting, said he still believed something could be done to influence the government not to accept the Kendrew cuts. Other scientists at the meeting were encouraged by a comment from Professor Eric Ash, a member of the committee and shortly to become rector of Imperial, who said he felt the 25 per cent figure was a negotiating target.

However, there is still a group on the Advisory Board for the Research Councils which sees 25 per cent as a minimum cut, and this was made clear to Sir Keith in the board's advice to accept Kendrew's recommendations.

The physicists' resolution says many of the Kendrew report's conclusions are illogical and unrealistic, and argues that asking for a 25 per cent cut in the CERN budget would be seen as scientific vandalism by our European partners.

The meeting also agreed that a cut of 25 per cent in the domestic funding for high-energy physics would prevent Britain getting proper value from membership of CERN. The resolution urges the government to accept the Kendrew call for international laboratory to protect against exchange rate changes, and to think more about global collaboration in high-energy physics and the chances of spreading the cost of CERN among more members.

In addition, the resolution calls for an increase in the DES science vote to redress what it calls the desperate underfunding of UK civil science. The mood of the meeting, as one physicist put it, was that "the ills of the rest of the scientific community won't be solved by slashing particle physics".

# Poly strike threat recedes

Liverpool Polytechnic is today enrolling students for the new term, despite having been closed for a one-day stoppage earlier this week, and in defiance of the financial threat still hanging over it.

A token stoppage by the caretaker's union – as part of Liverpool's one day protest action against government cash restrictions – meant the polytechnic stayed shut on Wednesday, when the first students should have been enrolled. Instead, Mr John McKenzie, the rector, delayed the procedure.

The lecturers – members of Natfhe – did not join the day of action. They had also voted, nine to one, both in the polytechnic and in the city as a whole, not to take part in an indefinite strike. This action was called off earlier in the week, when the town hall workers' union voted against it.

The polytechnic's financial future is still uncertain. But Mr McKenzie said that senior members of the National Advisory body and the Council for National Academic Awards, whom he met this week, had agreed with the polytechnic's decision "to go ahead with business as usual."

# College and council staffs at risk from YTS extension

Job losses among college staff and other local authority employees are inevitable under the Manpower Services Commission's plan for the new two-year Youth Training Scheme, the local authorities warned this week.

It is now clear that they will be forced to close a large proportion of their existing YTS projects and will face great difficulty in funding the remainder.

A meeting with top MSC officials last week confirmed the authorities' worst fears. Mrs Elizabeth Reid, the Association of Metropolitan Authorities' assistant education officer, said afterwards: "There is a great deal of pain ahead for the authorities and for many people who have committed themselves to these projects."

The authorities have been left in no doubt that their scheme will be reduced in number and in size: the plan provides for "special needs" places – the kind that are at present provided by local authorities or voluntary agencies rather than by employers, to be cut from 90,000 to around 55,000.

But it is believed that the cuts will go deeper because of the new system of funding, under which anyone managing a scheme will get a block grant for every trainee plus a premium for any youngsters whom the MSC agrees are in the special needs category.

The authorities, many of whom have incurred big deficits on the existing YTS which the Education Secretary refuses to exempt from spending penalties say that this will mean they will not be able to run YTS projects without subsidizing them much more heavily.

This is because:

- The block grant is not meant to cover the full cost of training and the trainee allowance; employers are expected to recoup the difference out of the work the trainees do and the special needs premium is not nearly enough to replace this;
- Not only will providers get less per place than under the present Mode B arrangements for special needs youngsters, but they will only be paid for places while they are actually filled;
- The many local authority schemes which are run under the present Mode A, on the same funding as that received by employers, would incur heavy losses under the new arrangements because authorities cannot use their trainees in place of adult workers or make profit out of their work;
- The MSC is hoping to encourage private firms to take on many of the special needs youngsters and is willing to pay them the premium for doing so.

Many in the meeting concluded that the commission was trying to postpone the finance problems and keep some local authority provision intact until the run up to the next general election.

By then it will become clear whether the YTS can be run without the local authorities and the Government may be more willing to provide extra funds.

# DON'S DIARY

Who is Don anyway? My dictionary says he's a Spanish nobleman, a swell, or a college authority. If he's *donnish* he has the air of a don, if he displays *donnism* he's given to self-importance, if he's *Don Juan* he's an attractive profligate – what! There can't be many of those around in universities. I'm not any of these. Maybe this could just be Sal's diary.

## MONDAY

I've only been head of department for two weeks and this is the third request for a report on the department's activities and ambitions, plans and personnel. It's mainly to help the university plan into the late 1980s which by my reckoning arrives next January 1. Still the exercise has helped me get to know the past, present and hopeful future of the department quickly.

It was a pleasant surprise to really learn how much has been done since our department was founded in 1967 and what exciting plans there are for the future – notwithstanding my colleague Nev Bennett's imminent departure for Exeter and a life-sentence of laughing at the jokes of chairman Wragg.

Once irritation and annoyance at the nature and timing of the University Grants Committee requests had worn off it was nice to see the positive thinking generated. Cynics may say that threats concentrate the mind wonderfully, but most employees of universities do realize how privileged they are and how expensive their institutions are, and they are more than prepared to increase their efficiency, respond to the needs of the economy, generate new sources of funding, develop new ideas, etc without being bullied and threatened.

However, they do wish the exercise wasn't presented in such zero sum terms – "cut or else". And can we be sure that the money "saved" will really go to inner city nursery schools, to educating handicapped teenagers or to Ethiopia – rather than on another Falklands runway?

## TUESDAY

9am and here I am at my desk seeing how quickly I can pass bits of paper from one side to the other. One advantage about being head of department is that Joan opens my letters for me – a skill I never really mastered – and fields phone calls. I don't subscribe to any notions that women make better or worse bosses than men, but at least I'll get my own coffee.

I'm already beginning to understand the knowing smiles from other professorial directions when I asserted that it must be possible to teach, research, write, do all the other academic things *and* be head of department! Something will have to go, but no doubt Jarratt-type efficiency will help.

I did go on a splendid two-day course at Surrey University on "Leadership for Heads of Departments". We did wonderful simulation exercises organizing the Department of Astro-Linguistics, which contained the biggest bunch of bloody-minded academics you were ever likely to meet (outside your own department?). We also watched John Cleese films on how not to run meetings and how to avoid taking administrative work home.

I thought I'd learned something but after lunch today was out-manoeuvred by our space committee, or rather our lack-of-space committee, whose arithmetic job it is to take rooms away from people. There is a certain contradiction in dutifully attracting outside research grants and then having nowhere to put the research officers and projects. Perhaps our future research applications should include equipment – tents.

## WEDNESDAY

Back in my office again, and it's raining outside. This is not a jet-setting or even a very sociable diary. I finish a paper for the British Educational Research Association annual conference to be held in a couple of weeks, think about a paper for a September conference on managing change in special education, and try to make sense of some data from a project on curriculum option choice.

My colleague on this last project now has a job in Edinburgh, I am in Lancaster and for complex reasons the data is on a computer in London – which makes analysis and writing-up a tricky business.

## THURSDAY

Sunshine, and a brisk early walk around the campus to sniff the air from the sea on one side, the fell on the other and the Lakeland mountains in the distance – geographically, the university is in a most attractive position.

Today I have one of those days I used to think being an academic was all about. I plan my undergraduate course on "race and education" for next term, becoming absorbed in working out lecture titles and seminar tasks, reading lists and essay topics.

I wander through the library checking books and articles, watching bits of the video to be used and inevitably spend a couple of hours browsing among quiet shelves – there is time to think if you make it. The role of the academic is not well-documented, despite a large literature of the Lucky Jim, History Man type.

It's an expanding job you learn about as you go along – learning to teach, examine, research, write, and to get on with colleagues – learning about the committees, panels, advisory bodies, steering committees and editorial boards you will end up on, learning the Machiavellian skills of administration, negotiation with publishers, research-grant bodies, government departments, local authorities, industry and the hundred other tasks being "a don" entails.

In future we will need to clarify the skills needed to be a successful academic more and do a better PR job at demonstrating the depth and extent of skills, duties and responsibilities.

## FRIDAY

A level results day and many messages from UCCA! My heart goes out to all those families chewing their nails. I've done it three times as a parent. "Oh God, will they take me with B, C, D, when they said B, C, C, ?" "Telephone and find out." It's not so easy when you are on the other end of the telephone. This is where we *could* be honest. "Well, actually, you would have got in with those grades a couple of years ago, but we've had our quota reduced and we can ask for higher grades."

I'm depressed at the absence of manual parentage among the successful students. Numbers of women being admitted can be checked and this is high in our department.

But there is no way of checking whether we are admitting ethnic minority students. No information here is a disadvantage for minorities: we cannot develop policies to bring in more black home-educated students until we know how (few) there are.

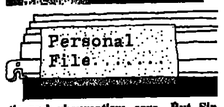
We ought to be moving away from educating only the white middle-class young – we must create the conditions whereby those formerly excluded from higher education can join in. This not only makes economic sense – using the talents, and training or re-training people of all ages, and backgrounds, it also makes social, political, moral and, last but not least, educational sense.

**Sally Tomlinson**

*The author is professor and head of the department of educational research, University of Lancaster.*

# New gunslinger at the ESRC Corral

by Paul Flather




**It has been quite a baptism for Suzanne Reeve. She is coming to the end of her first month as secretary of the Economic and Social Research Council – having taken over at the moment when the council lost its top three officers.**

**Mrs Reeve replaced Dr Cyril Smith, secretary since 1976, who retired and is now a research consultant. The deputy secretary, Mrs Catherine Cunningham, has just moved to the Cabinet Office. And the chairman, Sir Douglas Hague, is convalescing following a heart attack and is not due back until the end of October.**

**Mrs Reeve is a fan of old westerns. So with true grit she has steeled herself to do whatever has been necessary – stepping in to chair meetings, getting to know all the staff, and ensuring that all Sir Douglas's plans are carried out.**

**She served for a while as joint secretary to the "transmitted deprivation" programme initiated by Sir Keith Joseph when he was Secretary of State for Social Services, and funded jointly by the ESRC and the Department of Health and Social Security. Mrs Reeve joined the DHSS after working in the Home Office Research Unit and was responsible for what seemed a backwater, arthritis and rheumatism care. But Sir Keith was himself concerned that this was a neglected area. Mrs Reeve was summoned and travelled the country with Sir Keith promoting special research projects to combat the illnesses.**

**She then spent 18 months under the wing of Lord Rothschild in his "think tank", in a spell she would not have missed for anything, until the change of government in 1974. She left the Civil Service to have children, and spent some time in America before rejoining the DHSS.**

**She jumped at the ESRC job because it would allow her to combine her interests in administration and in research.**

**"I have always been bothered about the gap between those who are particularly good at research and those who are searching desperately for good research material. There is a great mismatch between the two which needs to be put right," she said.**

**She is aware of the great debate over pure versus applied research but is clear that as the council spends taxpayers' money it needs to produce useful research for all customers. She is in favour of useful work that does not jeopardize the researchers' independence.**

**Her tasks will be to help break down the suspicions over social science and to ensure that the ESRC is taken seriously by all who should take it seriously.**

**Her style is crisp, energetic, dashing but careful, more Gary Cooper than John Wayne. She is above all a "sociable creature". By all accounts she has already created a fizz among council staff.**

# Joseph pleads for 'healthy enterprise'

by Adriana Caudrey

Sir Keith Joseph, the Secretary of State for Education, has urged universities to seek financial backing from industry and commerce, but assured them that any additional income would not be at the expense of their Government grant.

Sir Keith told a gathering of academics, university officers and industrialists at Fitzwilliam College, Cambridge, this week: "We do not think it is healthy for universities to be as entirely dependent on the taxpayer as they have become. We would like the universities, for their own sake, to have that increased independence that comes from an endowment of their own."

He called for a beneficial relationship between the two communities to replace the mutual mistrust which he said had led to a cultural gap between academia and industry.

According to Sir Keith, universities could afford to be more entrepreneurial without compromising their standards. For an industrialist it would be an intimation of immortality to have his name associated with an endowment to a university.

Sir Keith also called for more exchanges between university and industrial staff, as well as more joint appointments, industrial sponsorship, sandwich courses and consultancy exchanges.

He said that any questions on the tax implications of universities receiving supplementary funds from other sources would have to be put to the Treasury.

During the conference there were murmurs of cynicism both from academia and industry, with representatives from both sides complaining that the Government was not providing incentives for them to forge stronger links.

Sir Keith argued that any symbiotic relationship between the two communities should be based on enlightened self interest. Yet it emerged from the symposium that the needs of academia and of industry were in some ways incompatible.

For example, Mr Len Peach, IBM's director of personnel and corporate affairs, said: "We are concerned that our available resources are fairly distributed among universities and other educational institutions. Thus we tend to avoid sustained or permanent commitments to one institution."

Mr Edmund Dell, chairman of Channel 4, a former Treasury minister and a lecturer and member of the council of Imperial College, London, said that one-off funding by industry did not always fit universities' requirements.

During the conference industrialists had called for academics to be less difficult in seeking sponsorship from them. But Mr Dell reminded them of the recent report from the Committee of Vice Chancellors and Principals which said that academics want limits to the money they accept from industry so that academic standards are not compromised.

Mr Sam Toy, chairman and managing director of Ford UK and a graduate of Fitzwilliam College, said that graduates arrived at his company in the form of semi-finished components, because they had not received training in the specific fields in which they would be working.

Many in the academic audience argued that new technology was developing so fast that it was a mistake to make university training too specific.

# Warning on trained obsolescence

Technology graduates deserve more sympathy than arts graduates because of their poor job prospects, according to Mr Derek Hornby, chairman of Rank Xerox UK. He was giving the keynote speech at Dundee University this week at the conference of the Standing Conference of Arts and Social Sciences in Universities.

Mr Hornby agreed that industry needed some highly specialized graduates, for example electronics engineers. But he said that unless they had constant retraining their knowledge was obsolete within five years.

"The wisdom of today is that information technology is the new salvation. The world belongs to the scientist or the technologist and arts either conform to that or go under," he said.

"Careers for the future will demand a general appreciation of people, organizations, societies and how they work rather than detailed knowledge of one technical skill," he said.

"I think the situation of a technology graduate aged 40 is more serious than that of an arts graduate in the world today."

But it was vital that some understanding of information technology, its use and its impact, should be part of every arts graduate's training. "At a minimum, the use of a word processor might make reading essays a little easier," he said.

There had always been an acceptance by arts graduates that they were unlikely to work permanently in their discipline. But this flexibility of outlook needed to be fostered earlier than at university level.

Mr Hornby suggested an educational liaison programme between industry and schools to help young people understand the world of work and how it related to their own ambitions.

# Queen's braced for record

Queen's University, Belfast, will this year enrol the highest number of students in its history. With around 1,800 freshmen it has been forced to close its doors to the UCCA clearing scheme and even to turn away numbers of local applicants.

Said admissions officer Stirling Wisener: "We felt we had committed ourselves as fully as we dare and decided not to declare vacancies. We could have admitted even more but for cutbacks in public expenditure."

The science faculty has seen the biggest expansion, with over 400 new students surpassing all previous intakes, a growth Queen's explained as being in line with the swing from arts and social sciences the UGC encourages.

Keen competition for medicine, and electronic engineering has forced the faculties to rigorously interpret their targets. This has meant that for the first time the selectors have had to adhere more strictly to the requirements of an A and two Bs for the 115 places in medicine, for example, or to three Bs for the 95 law places.

Numbers have also had to be limited in electronic engineering and accountancy and the vice chancellor, Sir Peter Froggatt, has warned that if the cutbacks continue, admissions to arts and social sciences may in future have to be restricted.

Said Mr Wisener: "Like ours, the University of Ulster's applications have vastly increased."

He added: "It is not yet possible to assess the exact figures, since some people each year go to England, fail to



# ANTI THES IST

## Retiring head of public relations

Strathclyde University has appointed a director of public relations services to improve communications within the university and with the outside world. A good first move could be to announce the new post, which has not yet been done either internally or to the media, although the appointment was made over a month ago.

However, *The THES* can reveal that the new director, who is to coordinate the three existing offices of information, publications, and alumni relations, is Professor Robert Kenedi, 64, who retired as Strathclyde's professor of bio-engineering in 1980. He then became associate director of Hong Kong Polytechnic, retiring from there in 1984, and returning to Strathclyde as external relations adviser to the principal, a post which was never advertised.

## Spy given the cold shoulder

**As one spy scandal threatens cultural links between Britain and the Soviet Union, Keele University is fearing the worst after a side-swipe from an earlier one.**

**Bitov's Britain, published by Penguin subsidiary Viking Press this month, purports to be the biography of double-defector Oleg Bitov, who returned to the Soviet Union after fleeing to Britain.**

**And, to Keele's annoyance, the translator of what the publishers describe as a "sharp satire" is listed as a Dr Donald Hunter, of the university's Russian studies department.**

**Although the book is a spoof and Dr Hunter does not exist, the university fears that its carefully-nurtured relations with the Soviet embassy in London may be badly damaged.**

*Red faces all round at the National Union of Students over its new multi-coloured magazine style* National Student *which features heavily the organization's South African campaign. Unfortunately for NUS the printers handling the contract have subsidiary and associated companies employing blacks and coloureds in South Africa – and are on an Anti-Apartheid blacklist.*

## A little knowledge . . .

Leaving the press conference on the Browne inquiry report and thinking that maybe this really was the end of the Polytechnic of North London saga, our reporter jumped into a cab and was treated to the following conversation.

Cabbie "I had that Harrington in the back of the cab once. This inspector flagged me down and told me to take this bloke to the poly in Prince of Wales Road. I thought I was going to get a brick through the window. All these students were asking me if I knew who it was in the cab, and I kept saying I didn't, though I guessed all right.

Reporter: "What did you talk about while he was in the cab?"

Cabbie: "Nothing much. We didn't talk about politics. We talked about 'olidays . . . "

*Even the Inner London Education Authority seems to have been by surprise at the level of recruitment for adult education courses this year. Islington was sent 1,500 registration forms for the big day, having asked for 10,000, and ended up photo-copying hundreds of forms to cope with the rush. It should do wonders for the stationery budget.*

Dr Anthony Kenny, Master of Balliol College, Oxford, makes a point to Mrs Hussey and Sir Keith Joseph.

# Keele bids for first Irish course

by John O'Leary

Ministers from both sides of the Irish Sea lent powerful backing to the establishment of Irish Studies as a recognized discipline within higher education at a conference in Oxford last weekend.

Both Sir Keith Joseph, Secretary of State for Education and Science, and Mrs Gemma Hussey, the Irish Minister for Education, spoke at a dinner marking the start of the conference, which saw the formation of a British Association for Irish Studies.

If the University Grants Committee agrees, Keele University will launch the first degree course in Irish studies next year and there is a proposal to establish the first postgraduate course at Oxford University. The new association will hold its first full meeting in July with the aim of spreading the courses more widely.

Sir Keith said it was a measure of the importance which both governments attached to the development of mutual understanding that both he and Mrs Hussey were attending the conference. "It may well be unique for two ministers of education of two countries to be present at the launching of a purely academic association," he said.

Mrs Hussey predicted that the formation of the association would be seen in time as an important step in improving the "occasionally tangled and tortuous relationship between these islands". She added: "It is indeed high time that the complexity of this relationship, in all its aspects, was subjected to academic research and examination in an objective, rigorous and clearly defined approach."

The Irish Government was concerned that the educational system in the United Kingdom did not make it possible for students of Irish descent to pursue an interest in Ireland, particularly at the higher level, she said. Excellent work had been done at secondary and adult level, which could be built upon.

"The balance of history has left us in Ireland with a constant (indeed some might even say obsessive) awareness of Britain," said Mrs Hussey. "In Britain, on the other hand, we see an equally consistent forgetfulness and at times ignorance about Ireland." The Irish were very conscious of the disparity between the place Britain occupied in its educational system and the absence of Ireland from British syllabuses, she said.

Ms Mary Fitzgerald, daughter of the Irish prime minister and a lecturer at Crewe and Alsager College, opened the business sessions of the conference with a paper underlining the case for Irish studies at every level of education.

"The almost invisible presence of Irish studies resources within the British educational system is typical of that relationship between Britain and Ireland which Irish studies must explore," she said.

A survey of academics teaching or researching subjects related to Ireland produced a first register of almost 200 people interested in Irish studies and it is expected that the real total is more than 300.

# Prestige department faces axe

by Olga Wojtas
Scottish correspondent

Aberdeen University is poised to axe its prestigious department of religious studies.

The move has been precipitated by the loss of the three of the department's four staff over the past year. The department's head, Professor Andrew Walls, retired early because of ill health, the reader, the Revd Fr Adrian Hastings, has taken up a chair at Leeds University and another lecturer has resigned for personal reasons.

The university court and senate have decided not to fill these posts, leaving only an acting head, Dr James Thrower, and a temporary lecturer in the department.

Both senate and court have agreed that the department should continue until September 30, 1987, with its future to be reviewed during 1986/87.

But there will be nothing left to review by that time, since this session is to be the final intake to honours courses. Responsibility for teaching ordinary and advanced courses is being transferred from October to the divinity faculty and an immediate embargo has been placed on new postgraduates.

Aberdeen's principal, Professor George McNicol, told the senate that the decision to end honours teaching in an important academic area had been taken primarily on financial grounds to take advantage of the "fortuitous but regrettable circumstances" of the staff losses.

Although the department already works closely with the divinity faculty it was founded 15 years ago within the arts and social science faculty, and there is likely to be unhappiness about it being subsumed by an overtly Christian faculty.

The department has attracted a considerable number of overseas students, in particular Muslims.

# Lecturers in pay-off row

Lecturers from Heriot-Watt University's doomed pharmacy department may have to stay on for more than two years simply to qualify for compensation for loss of their jobs.

The University Grants Committee, which ordered the closure, is refusing to offer advice on how the rationalization should be accomplished and insists that no scheme should start before October 1987.

It argues that special arrangements for Heriot-Watt will have repercussions elsewhere, and has warned the university that it will face financial penalties if it enhances or otherwise varies the compensation terms for the pharmacy staff.

This week the Association of University Teachers protested forcibly to Sir Peter Swinnerton-Dyer, the UGC's chairman, attacking the October 1987 starting date as a "disastrous mistake," and demanding greater flexibility.

It believes that any compensation scheme must take effect from January this year – when the UGC confirmed its original decision that the pharmacy department should close despite opposition from the university, the Pharmaceutical Society and the association.

In a letter to Sir Peter, general secretary, Ms Diana Warwick said: "Heriot-Watt is being deprived of the possibility of making sensible arrangements for its immediate problem because the UGC has no clear view of how to cope with the possible loss of jobs in the system as a whole in the future."

October 1987 as the starting date for the compensation arrangements would be a "disastrous mistake." Staff would not be able to leave the university earlier while retaining the right to compensation for the loss of their jobs – and it was likely that 11 lecturers would still be in post in October 1989, with the university facing the task of providing them with suitable teaching and fulfilling the terms of their contracts.

The AUT believes that one step the UGC should encourage is redeployment to other universities, aided by funding new posts designed to strengthen other departments.

# Report signals new YTS qualifications

by Adriana Caudrey

The first detailed proposals on how to introduce certificates of achievement for the extended Youth Training Scheme have been published this week, in an interim report which advocates a big shake-up in the structure of vocational qualifications.

The document, *Review of Vocational Qualifications in England and Wales* – produced by a government set-up review group – has been presented to Sir Keith Joseph, the education secretary, as well as other ministers, and Mr Bryan Nicholson, chairman of the Manpower Services Commission.

The interim report suggests that in order to introduce the YTS certification in time for the launch of the new extended scheme in April 1986, the MSC should set up a number of bodies to be responsible for setting standards, assessment, and validation for the new qualifications. The report also proposes the creation of a YTS certification consortium to monitor and coordinate the certificates nationally.

The working group of educationists and industrialists points out that successful YTS certification can only exist within an improved system of vocational qualifications as a whole. In their report they draw up a five-point plan for reforms. These are to:

- create a new system of qualifications which may be easily understood by those who provide education and training, trainees, students, parents, employers, and trade unions;
- make the scheme comprehensive, to cater for a wide range of occupations and abilities;
- offer benchmarks of knowledge, skill, and understanding which are recognized and valued by students, employers, trades unions and educational bodies, and to monitor qualifications to ensure consistency of standards;
- enable individuals to progress within the vocational qualifications system, and beyond it into employment or continued education;
- provide a cost-effective system.

The interim report argues that vocational qualifications should be drawn together within "a single coherent framework". It says that existing qualifications both in education and training should be classified and linked. Gaps and inconsistencies should also be identified.

The working party is now awaiting responses to its report from ministers and the MSC. Afterwards it will start work on its final report, due to be published in April 1986.

The interim report is available from the Manpower Services Commission, Moorfoot, Sheffield.

## Joint venture

Manchester University has won support from ICI for a new £250,000 joint venture in research on liquid crystals – new substances with a wide range of potential uses in visual displays and communication systems.

Liquid crystals have become known as a British invention exploited fruitfully overseas, most notably in Japan for pocket calculator displays and similar devices. The new collaboration in Manchester aims to develop basic research which will then be used by a British company.

# Canvassing for business

The Department of Education and Science has written to vice chancellors and industrialists to find out if they are in favour of the privatization of business schools.

The move was urged in a recent report by Professors Brian Griffiths and Hugh Murray of the City University Business School who argued that the present state-funded system develops among graduates an ethos which is "risk-averse, secure and non-entrepreneurial".

Now the DES is canvassing opinion among interested parties with a view to a possible reform of the present system next year. The Secretary of State, Sir Keith Joseph, is known to favour a move away from public funding of business schools.

Department officials have already consulted the Committee of Vice Chancellors and Principals and the individual heads of business schools for their views. The under-secretary of state for higher education, Mr Peter Brooke, has written to industrialists. All parties have been given until November 1 to respond.

The Griffiths/Murray report, published by the right-wing Institute of Economic Affairs, claimed the privatization of business schools would save taxpayers £10 million a year, as well as being beneficial to the schools themselves.

But some universities fear that the move would be just the first step towards the privatization of all post-graduate vocational training.

THE GENIUS
by Howard Brenton
26 September – 19 October 1985
"Makes a lot of other recent theatrical contributions to the nuclear debate look puny." Michael Billington, The Guardian
Concessions for Students/OAPS/Unemployed/Disabled (483)
LEEDS PLAYHOUSE
Calverley Street 442111

# Validators promised continued power

by John O'Leary

Universities received reassurance from Sir Keith Joseph, Secretary of State for Education and Science, on their continued role in validating college degrees in a weekend speech which left open the possibility of changes in the wake of the Lindop report.

Sir Keith spent more than an hour at the Conference of Validating Universities, meeting at Oxford, but stressed that he had come primarily to learn. Most of the session was spent in dialogue with delegates over the Lindop committee's allegations of double standards in the validation of college degrees.

Professor Maurice Craft, of Nottingham University, led a stream of demands for the evidence to support the statement, which he suspected was simply a hypothesis. "If there are double standards, I think we would like to know about them," he said.

Sir Keith replied that he did not know what was behind the allegation, although the committee was composed of respected individuals who would have had some reason to make the comment.

In his speech, Sir Keith welcomed the conference's broad support for Lindop's main recommendations because he considered university validation of public sector courses to be an important feature of higher education. He added that the report in no way underestimated their importance.

Sir Keith complimented the universities on keeping the bureaucracy of validation to a minimum. "I take very seriously the Lindop committee's concern that validation should not be accorded greater importance than it deserves and should not therefore overburden validated institutions with tasks which divert them from the exercise of their main responsibility, which is the provision of education," he said.

He was concerned, however, about the serious allegations over standards. "Only the highest standards can do justice to institutions' expectations of their own staff and students," he said. "Institutions have a right to be secure in the knowledge that their standards are being maintained."

Sir Keith identified the practice of giving different titles to degrees in colleges to those in the validating university as one area of particular concern. He was assured that Southampton, among other universities, had now decided to offer identical titles to college students.

No hint was offered on the content or timing of the Government's response to the Lindop report, which Sir Keith said raised a number of difficult questions. But he said there was much to commend the recommendations for a national body to oversee developments in university validation and for a code of practice among the universities. He also supported the report's call for universities to give the colleges more formal responsibility for their courses.

# Social work shake-up

by Maggie Richards

A new single qualification in social work following a three-year training period is to be introduced.

The unanimous decision to establish a new system of training was taken by the Central Council for Education and Training in Social Work (CCETSW) at a meeting in Harrogate last week.

A new award will replace the college-based Certificate of Qualification in Social Work and the job-related Certificate in Social Service. For those following college-based courses the new qualification will now involve gaining more practical experience, while those students in employment will be expected to spend more time studying.

Until the new sytem is introduced in 1990, the two existing qualifying routes, involving only two years training, will continue.

"The CCETSW was determined to provide a system of education and training within which social workers in local authorities, the probation service, voluntary and other agencies could be better prepared to meet the demands of rapidly changing social conditions and new forms of delivery," said Mr John Cooper, the council's chairman.

The motion finally adopted by the council says social work training should involve an appropriate balance of assessed elements: study in an educational institution and supervised practice in placement or in employment, or both.

All students, it adds, should undertake at least one period of supervised and assessed practical work, with each one being assessed to a common standard for the new award.

Discussions are to begin immediately.

# Women set out priorities

by Felicity Jones

Policies for women should be an education priority for institutions and education authorities, a conference at Northern College on access for women in further and higher education heard.

Women's pressure groups should become subcommittees of the academic board and draw up policies to ensure equality of opportunity for both staff and students, said Miss Valerie Hider, an Inner London Education Authority staff inspector.

These subcommittees should ensure that the policy was circulated to men and women within the institution and, once accepted by the academic board, would soon see that the policies would influence recruitment.

There was no advantage, she said, in providing fresh start courses for women which were linked into vocational departments in further education colleges while they remained male dominated at the top level.

Manchester city council has appointed two officers to draft a policy for women. Their brief highlights the need for the practical realities of women's lives to be taken into account if women are to have equal access. This includes the flexible timing of classes, identifying women members of staff to undertake outreach work, providing advice and ensuring good child care.

Bradford and Ilkley Community College has adopted a policy for women and has agreed to appoint a women's officer. The policy places particular onus on those areas of the college which have recruited single sex student groups.

Ms Jane Thompson lecturer in adult education at Southampton University said lecturers should not underestimate the sacrifices many women made to go back into education. "I can count on one hand those women who come to classes with the support of their family. Many women come having already done a full day's work and will have to do a full day's work when they return home."

# Survey finds little evidence of shortages

Skill shortages present no problem for the overwhelming majority of manufacturing firms, according to a new survey of British companies. And there is little evidence that the current level of shortages is bad enough to slow economic growth.

The results of a survey of 1,300 firms by the Confederation of British Industry and the Manpower Services Commission are reviewed in the first edition of a new journal produced by the Institute of Manpower Studies at Sussex University.

They show that only 13 per cent of the firms had serious problems matching staff demand to supply. Although the institute points out there are critical shortages in some localities in the South of England and in the electronics sector, the general conclusion is that such shortages have not become widespread.

Where there are shortages the IMS authors suggest they are self-inflicted. Companies insist on trying to solve them by recruiting fully-qualified staff, instead of retraining existing staff or recruiting at a lower level and training.

This trend is disturbing, says the institute, suggesting that it is caused by a lack of in-house training or by fear of competitors poaching trained staff.

The review suggests that shortages have been a feature of every postwar economic upswing. They may become more acute this time if manufacturing and construction recover further.

And in a separate paper, Richard Pearson of IMS says there will be more competition among employers for graduates in future as the supply of desirable graduates is set to fall over the next decade.

He sees two timebombs set to undermine any further switch to technological courses in higher education: a shortage of students with maths and physics A levels and a lack of suitable teachers.

*Manpower Policy Practice. The IMS Review. Vol 1 No 1.*

Saying it with flowers – Professor Roland Smith, of the University of Manchester Institute of Science and Technology's management sciences department, presents student Katherine Sample with a bouquet to commemorate her success as the department's 2000th graduate.

# HMI hits at bad management

A rigid, hierarchical management structure is blamed for a lack of innovation and long-term planning within the engineering departments of higher and further education colleges in Wales.

Her Majesty's Inspectors say that department and section heads are bogged down with petty details and therefore have little time left to "give a wide perspective" to planning, monitoring performance and developing external contacts.

The inspectors observe in their latest report on engineering departments in the Principality, that curriculum development is limited because of this poor management. Yet when changes are suggested, the teachers can meet the challenge, and are described as "capable of planning and innovation of the highest quality".

According to the inspectors, the teachers dictate the pace and style of learning. Textbooks and other resource material are rarely used, except on full-time higher education courses.

They provide examples of lecturers "explaining" something by a long rambling discourse which on some occasions is factually inaccurate." There is a marked difference between the teaching abilities of lecturers who are in touch with current industrial practice and those who have lost touch with industry.

Those who are out of touch do not welcome contributions from students with industrial experience because this heightens their own sense of insecurity. There is also a big discrepancy in the extent to which teachers can make full use of aids.

The inspectors say there are an increasing number of computers in engineering departments, but that only about 25 per cent of the staff use these in their teaching. "In both sectors, but particularly FE, not enough engineering staff have adequate experience of computing," they say.

Computers are being better integrated into courses at higher education colleges

## Material link

Links between Sheffield University, Sheffield City Polytechnic and local industry are to be further developed with the opening in the city of a technology transfer unit in materials processing. The unit will aid the commercial realization of new manufacturing and materials technology emanating from research laboratories in the university and polytechnic.

## School of the air

**Lecturers from Tayside's colleges of further education and community education in Dundee, Perth and Arbroath are to become broadcasters next month with the launch of "Campus Radio" on the airwaves of the region's independent radio station, Radio Tay in Dundee.**



UNION VIEW

# Prescience, priorities and probity

**The members of the University Grants Committee Review Committee have been given a wide remit. Their political range does not seem so large.**

**Perhaps fortunately, it is to be headed by Lord Croham, the former head of the Civil Service with a reputation for fairmindedness and tough judgement. He will need all his acumen.**

**The DES seems to look to the committee for remarkable prescience and a good deal of very detailed work. It wants the revamped UGC to take account of the needs and priorities for manpower and for research capability of industry, commerce, the professions and the public services.**

**But cost-effectiveness is to be the main criterion, with the Jarratt Report and the lessons of the Government's Financial Management Initiative looming large.**

**Although this review is recommended by Jarratt, some review has seemed inevitable. The department has not been satisfied that the UGC's 1981 cuts were directed at the right targets. Ominously they now question the continued appropriateness of the UGC's present position as an advisory body with no formal executive responsibilities.**

**To the Association of University Teachers it always looked very much as if the UGC was determined to facilitate Government policy for the reduction of higher education finance, rather than speaking up for the universities. Is that too harsh a judgement?**

**It might be argued that the UGC has been following a clever, if high-risk strategy. The concentration of cuts, by placing the continued existence of some institutions at risk, might focus public attention on the real consequences of the Government's expenditure policies and incite vociferous and effective political resistance.**

**It is hard to swallow this line. Once on the down escalator, departments and institutions are likely to face irreversible decline ending in closure, merger or the creation of teaching-only institutions.**

**The UGC itself in any case is likely to have less direct control in future over resource allocation. The construction of a resource model for future distribution of grant and the desire to assess separately the components that make up the model as well as the use of performance indicators, is likely to lead to a much more rigid approach based on a mechanistic view of cost-effectiveness and value. It is also likely to build in exactly the sort of inflexibility the Government unjustifiably complains exists now.**

**The review, however, may well become bogged down in the Government's framework of expenditure constraint. Formula funding will benefit some institutions more than others.**

**Can Lord Croham's committee rescue the universities from the slough of despond? Perhaps they will be the ones to remind Government of the UGC's warnings about the consequences of further cuts for the universities and for the nation.**

**Making it even easier for the department to direct universities makes it less, not more, likely that universities will be able to respond to the needs and priorities on which the Government has placed so much emphasis.**

Diane Warwick

*The author is general secretary of the Association of University Teachers.*

# Warning on short contracts

by David Jobbins

Improper use of temporary contracts under which college lecturers may sign away important legal rights is increasing, according to their union.

Now union leaders are to warn local authority employers that the use of short-term contracts must be properly regulated, confined to areas where they can be justified and that the use of waiver clauses must stop.

The National Association of Teachers in Further and Higher Education wants individual authorities to agree a formula for ending the practice.

The union accepts that some temporary contracts can be justified when a lecturer is employed to cover for a colleague on maternity leave, sick leave or on secondment. But it believes that many authorities are taking advantage of the high level of unemployment to offer lecturers temporary posts instead of permanent ones, frequently insisting that they sign away rights to access to an industrial tribunal and to redundancy payments.

In some cases, according to Natfhe, temporary contracts are used as a form of probation. In others staff are retained on a string of contracts, often not knowing whether they will be renewed until the last moment.

Employers have said the use of such contracts stems from Manpower Services Commission funding arrangements and the authorities' parlous financial position. Courses would not run unless they were staffed by contract lecturers, they say.

Mr Jim Munnery, Natfhe's assistant secretary for salaries, said: "These excuses are usually spurious and mask a number of crude and wholly objectionable employment practices which callously exploit the fear of unemployment."

The system creates two classes of lecturer – one designated permanent with some job security and the other on contracts which remove the employment law protection.

While the union accepts that the employers' use of waiver clauses is legal, it also says the practice is indefensible.

Mr Munnery said: "People at their most vulnerable in the employment market are offered the choice of a job under these conditions or no job at all. They are in no position to challenge this odious practice."

In local negotiations the union is to seek the limitation of temprary contracts to specified situations. Renewal is to be on a permanent basis, waiver clauses are to be banned and consultation consistent with redundancy procedures it to follow in the event of non-renewal.

A model agreement pioneered by the union's north-west region divides contract employment into that which is known in advance to be limited to a specific period and "exceptionally" where additional staffing in needed for a project whose viability beyond a year is genuinely uncertain.

# NIACE threatens to publish

by Felicity Jones and Maggie Richards

The National Institute of Adult Continuing Education is prepared to go ahead and publish its findings on the serious gaps in adult education provision if a meeting with Sir Keith Joseph is not forthcoming.

It was at the Secretary of State's invitation that the institute prepared its "crucial issues" paper which is now in final draft form.

Sir Keith's invitation came at the institute's annual conference in Guildford when speaker after speaker took the floor to point out the cracks which were appearing in the adult education service due to financial cuts and divisive short-term funding.

The paper stresses that while adult educators endorse the Government's special programmes, which make money available under Manpower Services Commission and Department of Environment programmes, adult education generally is being eroded.

Mr Arthur Stock, the institute's director said: "There are a growing number of discreet pools that everyone has to fish with different fishing tackle.

"Adult centres and universities have to erect new initiatives out of these pools and have to deal with the different style of these special programmes but the main academic programme concerned with general liberal education has to look after itself financially if not managerially.

"There is a polarization of the endorsed programmes and the rest. It is not intended but the policy of central government is hastening the fragmentation of the service by a series of central programmes".

The paper cites examples of erosion from different cities and services.

The importance of creating a coherent education service for adults is stressed in the discussion document drawn up as a prelude to the report.

This paper, compiled for members of the institute's governing council, suggests three other steps which might assist in improving the service: minimum standards of staffing and resources; more flexibility in the use of special programmes; and improved coordination between agencies.

Despite the severe constraints under which adult education functions, the report notes the dedication of staff and pays tribute to their determination and continuing commitment.

The paper also highlights the responses of institute members, invited to give their views on current issues in adult education. Many indicated the special emphasis being placed on special programmes.

But, the discussion paper says, there was an "almost universal concern" about the narrow concepts of such work and the short durationof courses.

Dissatisfaction was also expressed about inadequate timescales, insufficient training periods, assumptions about external support, and false findings about students or trainees.

# Liberals see education as liberation

by Olga Wojtas
Scottish correspondent

**The Liberal Assembly's education debate in Dundee last week had an air of "everything you always wanted to know about education, but never thought would be lumped together in one motion".**

**The 85-line motion, passed overwhelmingly after one brief hiccup, called for education to become more open and flexible, giving everyone wider opportunities, and becoming "an instrument of personal liberation rather than a tool of social control".**

**It went on to cover the establishment of a department of education and training, curriculum emphasis on preparation for life and self expression, changes in assessment methods to recognize non-examinable skills, more community education, increased government funding for the Open University and Open Tech, greater efforts to combat race and sex-stereotyping, regular in-service training for both teachers and lecturers and an independent review body for salaries and conditions of service.**

**The hiccup came over the call for directly elected local education councils to replace local education authorities. This was defeated after speakers claimed it would cut education off from other local services, and was unlikely to result in more funding.**

**Councillor Chris Bradford, leader of Cambridgeshire County Council, who proposed the motion, said government control of education was increasing yearly, determining what should and what should not be taught. This was as unprecedented as it was dangerous.**

**Young people on the Youth Training Scheme were being "locked away in a self-contained box without access to the knowledge which would allow them to take a fuller part in society."**

**Councillor Beth Graham, shadow education spokesman on North Yorkshire County Council, said local education authorities were being undermined by the "secretive, autocratic and extremely powerful" Manpower Services Commission. "The sooner we see the end of it, the better for the future of our young people."**

Education spokesman Clement Freud addresses the debate

# Employers urged to start PICKUP rolling

Updating courses can play a vital part in contributing to the nation's economic success, Mr Peter Brooke, junior education minister, told a conference last week.

But in a period of financial constraint it was neither practicable nor desirable to inject Government funds to try to influence priorities in industry.

Mr Brooke was speaking at a seminar organized by the Building Centre Trust and the Continuing Professional Development in Consruction Group.

It was clear that in seeking provision industry wanted value for money, and the updating programmes sponsored by the Department of Education and Science had been developed with this aspect in mind, Mr Brooke said.

The role of PICKUP, the programme of professional, industrial and commercial updating sponsored by the DES, was to increase awareness among employers and individuals of the need for updating throughout working life.

He stressed the need for employers to take the initiative: "In these times of rapid technological, legislative and social change it is one thing to recognize the importance of updating and quite another to do something about it.

"It is the Government's policy that the beneficiaries of updating should pay the full economic cost and in industry this usually means the employer, although in some professions the cost is more likely to fall to the individual."

# Sex discrimination case verdict postponed

A sex discrimination case brought against the Equal Opportunities Commission by a Strathclyde University professor has been adjourned until November 1 for closing speeches.

Professor Angela Bowey, who holds the chair of industrial relations in the Strathclyde business school and is EOC commissioner for Scotland, alleged at an industrial tribunal that the EOC was guilty of sex discrimination in not interviewing her for the post of chief executive.

Professor Bowey, who was not interviewed by the EOC's management consultant until after the short list had been drawn up, claims the commission had decided consciously or unconsciously that a man would be better for the job.

But this was strongly denied by EOC chairman Baroness Platt and deputy chairman Mrs Jane Finlay. Mrs Finlay claimed Professor Bowey was unreliable and missed meetings, and that while she was "a very able woman" she was unsuitable for a job involving management.

But Sir Samuel Curran, Strathclyde's former principal, who appointed Professor Bowey, said she was a wholly dependable worker with wide managerial skills.

Professor Bowey, who conducted her own case, agreed she had not returned documents and had missed meetings, but said they had clashed with senate and other vital meetings at Strathclyde. There was a considerable difference between being a full-time employee of the EOC and a part-time employee with a full-time post elsewhere, she said.

Management consultant Mr John Howett said there had been some dismay among commissioners over Professor Bowey's application, and they felt she ought not to be shortlisted. She would have found the £30,000 a year job too humdrum, he claimed.

Dr Eric Robinson, principal of Lancashire Polytechnic, and a former EOC commissioner, told the tribunal he felt the advertisement was very strongly biased towards men.

# PARTY LINE

## Another memorial to municipal enterprise

Along the Lea Bridge Road, close to what remains of the once great marshalling yard of Temple Mills, there is a small squat gabled building: with lettering cast in stone, with no windows. On a country road in Corsica, the place might be mistaken for a family tomb. But in East London the building is a memorial of a different kind – to municipal enterprise. "Borough of Leyton Electricity Department" reads the inscription. It is now a London Electricity Board substation.

Local government pioneered many services we now take for granted – electricity, gas, sewage, water, telephones, hospitals: only later to pay the price of success, as the functions were removed from them and transferred to great corporations. There has been a similar story with higher education. Most of the first, and second generation civic universities owed their foundation to municipal enterprise: so did the technological universities; and so, evidently do the polytechnics. But, as the institutions have become bigger, and more national in purpose, the local authorities' role has withered. For the universities there will now be no more than a couple of seats on councils: but even for the polytechnics the connection between the local authority nominally responsible for the institution, and what happens day by day within it, is about as tenuous as that between the decision of the Merseyside County Council Police Committee, and what actually happens when copper meets crook in the back streets of Liverpool. With the National Advisory Body the process has gone a stage further: while through this mechanism local authorities collectively play an important role in the running of advanced further education, local authorities in particular play a diminishing one. Unless checked, the drift towards centralization will, in my view, be relentless.

Would regional government serve to reverse the process: should it in any event be reversed? To answer the questions in reverse. Yes and Yes. Local councillors may be a pain, and the changeover caused by elections a little tedious: but local government can at its best produce diversity, and independence from Whitehall. The problem is that existing authorities are – ILEA, and one or two others apart – too small to be effective as sponsors of national institutions like polys, or of other institutions of higher education. But regional councils, if they had full time councillors and a sound financial base, would be big enough to manage, small enough to care, and be different but not so parochial as to interfere.

I'm very much a latter day convert to regions. When the idea was in vogue in the 1960s and early 1970s – with Kilbrandon, and endless papers to the Labour Party Government Subcommittee – I could not see them working. Local government, especially in the conurbations, was very parochial; scarcely looking beyond its own boundaries. Whatever the merits of the old county boroughs (and they were many), they did not encourage the pursuit of wide horizons. There was no lasting experience at that time of anything that could approximate to regional government. Now, there has been. The metropolitan counties did bring together very disparate elements within each conurbation, and worked better than I certainly anticipated: government departments have gone regional; and so have the water and health services.

Moreover, improvements in road transport now give homogeneocity to most regions in the way that was not possible before.

I have the Government to thank for my conversion to regional government. First, they have shown the dangers of over centralization. Second, by abolishing the GLC and metropolitan counties, they have destabilized the *whole* of local government; paradoxically the shires more than the metropolitan areas. If Sandwell is fit to run most of its own services, why not Portsmouth, Southampton, Hull – or Blackburn? What's more it will happen within 15 years. A year's subscription to *The THES* to any who think I'm wrong.

Jack Straw

*The author is Labour MP for Blackburn.*


## T.H.E.S. Reprint Service
'Information Technology'

Two eight-page special reports have been published in the THES this year.

The first report published on March 22, includes the following articles:

The changing role of academic databanks; applying computer power to literary analysis; the use of educational video in business studies; the efficacy of the Alvey programme; computer modelling of weather and climatic change; manpower shortages at technician level.

The second report published on June 28, includes the following articles:-

Legal databases; how UNIX has established a cult following in the academic world; computer assisted language learning; the advantages of meetings by telephone; future prospects for computer assisted learning in chemistry; computer speech processing.

Copies are available at 80p each or £1.20 for both (including postage within the U.K.). Please Make your cheques/postal orders payable to Times Newspapers Ltd and send to:

**Francis Goddard, The Times Higher Education Supplement, Priory House, St John's Lane, London EC1M 4BX.**

overseas news

# Shape of a sneeze could lead to cure

from William Norris
WASHINGTON

The complete three-dimension structure of a common cold virus, including the position of every atom, has been established for the first time by scientists at Purdue University, Indiana.

Using human rhinovirus 14 – one of at least 100 viruses known to cause the cold – the researchers crystallized the viruses and X-rayed them at Cornell University's high energy synchrotron source. The information from thousands of such pictures was then fed into Purdue's supercomputer which, after a month of data processing, produced a composite image, showing where each atom was situated in three dimensions.

The achievement is being proclaimed by the National Science Foundation, which sponsored part of the research, as a possible precursor to the development of a vaccine against the common cold. But Dr Michael Rossman, who led the Purdue team, is doubtful of this because of the large numbers of viruses which can cause colds. What it could lead to, he says, is the possibility of a new anti-viral drug designed to treat the illness.

Biologists have long known the general shape of the cold virus, which looks like a fuzzy football under the electron microscope, with its outer wall composed of 20 triangles to make the geometric shape known as an icosahedron.

Inside this hollow shell, made of protein, is a small amount of genetic material which, when released inside a human cell, takes over the cell's apparatus and directs it to make identical copies of the virus. As a non-living object, this is the only way in which the virus can reproduce.

Purdue's discovery shows the exact positions of individual atoms that make up the protein molecules. Each triangle of the protein shell is shown to have peaks and valleys formed by the irregular shape of the protein molecules making up the shell.

Dr Rossman gives credit to Roland Rueckert at the University of Wisconsin for using the newly determined structure to discover that the part of the shell which must attach to a cell to cause infection lies deep within a "canyon" on each of the 20 triangular sides.

Though this "canyon" appears to be too narrow for human antibodies to reach inside, the possibility exists that a synthetic molecule could be designed which would be small enough to enter and bind to the attachment site, preventing infection. Such a molecule could be the basis of the new type of anti-viral drug.

Each time someone has a cold, their immune system must tailor new antibodies capable of attacking that particular virus. This takes a few days, during which the virus spreads, causing disease. When sufficient antibodies have formed, they stop the spread and leave the person immune to that type of virus, but vulnerable to others causing similar symptoms.

The antibodies that eventually stop a cold bind to sites on the rim of the "canyon" and probably distort its shape so that it can no longer bind to a human cell. These rim sites, however, are different in each type of cold virus, hence the virtual impossibility of producing an effective vaccine. But if colds can never be prevented, there does now exist the possibility that they may be cured.

# Student mountain starts to crumble

from Barbara von Ow
MUNICH

To the relief of West German higher education officials, there are increasing signs that the country's alarming "student mountain" may stop growing.

Recent figures reveal that although the total number of students soared by another 3.2 per cent to a new record of 1.31 million last winter term, that of student beginners dropped unexpectedly for the first time in many years. Against official forecasts, the number of new students fell to 221,000 in 1984/85, 5 per cent less than a year earlier.

While this drop partly reflects the protracted decline in West Germany's birth-rate, the main reasons for the new trend are the rapidly worsening job prospects for graduates. According to a recent study by the International Labour Office in Geneva, the number of unemployed degree holders in West Germany has risen fourfold to more than 100,000 over the past four years. By the year 2,000, the federal *Länder* commission for higher education has forecast, fewer than one million jobs will be available for more than three million university leavers.

That the deteriorating job situation has already led to a wider shift away from higher education was revealed in a study by the Institute for German Economy in Cologne earlier this month. While some 90 per cent of *Abitur* holders went on to university in the late 1960s, a recent poll showed that today only 58.6 per cent are planning to do a degree course after school.

The institute also found that polytechnic universities continue to attract people. In response, the education ministry has announced that it will further increase the share of funds for polytechnics (which has risen from 11 per cent to 18 per cent over the past few years) in the 1986 budget.

State secretary Anton Pfeifer said the drop in student beginners and the trend towards polytechnics underlined the "increasing realism and flexibility" of West German school-leavers.

At the same time he rejected allegations that the decline of student beginners was achieved at the expense of women and working-class families.

However, a report by the University Information System which has been monitoring student trends for nearly ten years, reveals that women and children from non-academic backgrounds were rapidly turning away from higher education.

In an interview with the Conservative newspaper *Die Welt*, education Minister Dorothee Wilms sharply rejected the notion of a "social selection" in German higher education. Education was "a chance as well as a risk for everyone," she said, adding that the government would continue to keep universities open for all.

However, the government would have to do everything in its power to prevent a "critical pool of unemployed graduates", she said. University degrees had to be shortened and restructured, as industry needed more university leavers with a broad general knowledge.

Much more alarming, the minister said, was the fact that a growing number of school-leavers were no longer sufficiently qualified to cope with the challenges of a university course. The decline in general knowledge was partly due to education reforms carried through by the Social Democrats in the late 1970s, she noted.

# Academics oppose Sun City project

from Geoff Maslen
MELBOURNE

Australia's first private university could begin accepting students in two years' time. The controversial proposal to create the university has been put forward by Murdoch University in Western Australia and is being backed by the giant Tokyu Corporation in Japan and the West Australian government.

A feasibility study into the project is expected to decide next month that the university should be established. Tokyu has offered to put up A$150 million to create the new institution which would be built outside Perth in Yanchep Sun City, itself owned by the Japanese firm.

But Australian academics have expressed alarm at the proposal and representatives of West Australian campuses described the move as "extremely serious, even catastrophic". A Western Australian executive member of the Federation of Australian University Staff Associations, Ms Dorothy Collins, told the federation's annual meeting that the creation of the private university could affect every facet of academic life, from terms and conditions of employment to courses and curricula.

Members of FAUSA would have to work hard "to develop our own rhetoric to combat the rhetoric of privatization", Ms Collins told the meeting. A survey at Murdoch found that two-thirds of academic staff were opposed to the Sun City project.

Nevertheless, Murdoch would be responsible for all academic aspects of the new university, while marketing of the courses would be handled by the Western Australian government-owned Exim Corporation.

Organizers of the Sun City university have set a target of 5,000 students, a figure they believe could be reached by the mid-1990s.

A spokesman for Exim said Yanchep Sun City would compete with United States and British higher education institutions for a slice of the South Eastern market. He said US universities were marketing aggressively and successfully throughout the Asian area.

Ordinary three-year degree courses would be offered at around A$15,000 to A$16,000 a year, covering tuition fees and accommodation courses. Some courses requiring heavy capital costs in equipment would be more expensive.

According to Exim, a significant number of places would be made available for Australian students on a scholarship or other subsidized basis. This would ensure that no Australian student was "seen to be disadvantaged", the spokesman said.

If the feasibility study gives the project the go ahead – and Western Australian premier, Mr Brian Burke, says he is confident it will – then Murdoch would begin putting together courses and planning staff recruitment: Exim would establish offices in Kuala Lumpur and Jakarta to begin selling education packages and construction of the new university would begin almost immediately.

Meanwhile an Australian government trade mission to Asia has recommended the overseas marketing of university and college of advanced education places on a full-cost recovery basis, that is selling education as a commodity in the international marketplace.

The trade mission – called the Education Services Mission to South East Asia, visited Singapore, Malaysia, the Philippines, Indonesia, Thailand and Hong Kong. On its return, the mission called for higher education institutions to be encouraged to develop strategies to market full-cost undergraduate, postgraduate and non-award courses for overseas students. The courses could be offered either in Australia or overseas as distance education or offshore packages.

Federal guidelines released in June require that overseas marketing of higher education only occurs on a full-cost basis, covering capital, equipment and recurrent costs and incurring no hidden expenses or subsidies for Australian institutions or the Australian taxpayer.

But academics are very concerned by these moves and the federation's annual general meeting overwhelmingly endorsed a motion opposing the introduction of private universities.

Gorbachev: launched criticism

# African brain drain: Soviets accuse West

**The Soviet Union has accused the West of encouraging a brain drain of African intellectuals by means of "an ideological conditioning". The criticism was first launched by the Soviet leader, Mikhail Gorbachev, in an interview with *Time* last month, and was subsequently developed by a Moscow radio commentator, Georgi Tanov, in an English-language programme beamed to Africa.**

According to Tanov, "budding African intellectuals, from wealthy families are 'convinced' during their Western-style education that they have a legitimately superior position in society and are therefore eager to accept jobs in Western countries, at a lower salary than their Western colleagues, but still at a far higher salary than they can earn at home."

At present, Tanov said, 40,000 "African specialists" work in the EEC countries, most of whom are employed by corporations who have contributed nothing to the cost of their education. Some 3,000 Kenyans are employed in American universities and industries (no figures are available for other African nations).

The "most conscientious deserters," said Tanov, say that they have no choice but to leave since there are no scientific and technological facilities for them at home. This, Tanov admitted, is true, but is no valid excuse, since "it is people who create such facilities". He compared the expatriate Africans to the Russian intellectuals who "deserted to the West" in the first years after the Revolution, while others stayed to "serve their people faithfully".

History, said Tanov, is not made by "emigrés" but by "peoples", including "patriotic intellectuals" who stay home to serve their own country. Nevertheless, he had to admit, that, in spite of the establishment of an African inter governmental permission on migration, which, *inter alia*, is intended to buy back those lost to the brain drain, relative few African intellectuals wish to take advantage of the scheme. Recently, he noted, the cases of African intellectuals returning home have become "more frequent", but a "massive return" of talent is not envisaged in the foreseeable future.

# Swiss professionals face dole queue

from Alan McGregor
GENEVA

Certain saturation is confronting law, economics, arts and medical graduates from Switzerland's eight cantonal universities. A similar situation applies to architects and civil engineers graduating from the country's two federal polytechnical institutes, in Zurich and Lausanne.

Even if officially registered unemployment among graduates overall is only 0.8 per cent, it varies widely from profession to profession. Currently included are about 100 new doctors and 700 teachers. Many jobs are available for electronics and software specialists.

The question of whether the market can absorb more graduates "remains open", according to the Federal Bureau of Statistics. Just over 5 per cent of the working population now holds a university degree or equivalent qualification, it says, but it is felt that graduates are in many jobs that could adequately be occupied by people with less advanced education. Some even talk, as was the case in the 1970s, of the "university proletariat".

From 1960 to 1980, some 80,000 graduates took up posts in the public and private sectors, increasing the percentage from 3 per cent to 5.2 per cent – compared, in 1980, with 8 per cent of all workers in Japan, 5.6 per cent in West Germany and 4.3 per cent in Austria.

The Swiss birthrate was at a peak in 1964, falling thereafter to a low in 1978. As a result, primary and secondary schools have relatively smaller numbers of teachers while crowded universities are struggling to prevent themselves imposing a *numerus clausus* in the more popular faculties, including medicine.

On the question of women in universities, Switzerland, with 35 per cent of students female, is trailing behind most European countries and is not that far ahead of Turkey.

But women now comprise 40 per cent of new students for the 1984/85 university year, as against 33 per cent in 1975.

# Better chance for Ms College President

There is good news and bad news for women who aspire to become university presidents in the United States. The good news is that the number of female chief executives on campus has almost double since 1975 – from 148 to 294. The bad news is that at the present rate of progress they will not achieve parity with men until the year 2070.

"That's a long time", says Judy Touchton, associate director of the American Council on Education's office of women in higher education, "especially when there are so many women ready right now to move into these positions."

However, for those not prepared to wait around for the second half of the next century, there are encouraging trends. Though the overall growth for the past decade has been around 13 new female presidents a year, 32 of them took office in 1984. And so far this year there have been 19 such appointments.

The bulk of the gains have been made in community colleges, coeducational institutions and colleges for women. But few of the women presidents have been given charge of large universities. Only 3 per cent head institutions with enrolments exceeding 20,000, while 73 per cent have fewer than 3,000 students.

The office of women in higher education has a national identification programme, on the look-out for women who are ready for major policy-making roles. The opportunities, they feel, are there. After all, there are 2,800 college presidents in America.

# Sports stars lose exam privileges

China's new State Education Commission has told schools, colleges and universities that they are forbidden to give preferential entrance treatment to students who are outstanding at sports. In two circulars it criticized educational institutions for attempting to attract students who are outstanding athletes and other sports award winners by deliberately lowering admission standards.

According to reports many institutions have been relaxing the required examination marks for sports stars they wanted to admit. In some instances educational institutions had admitted such students purely on the recommendation of their previous schools without any examination.



overseas news

Research creativity suffers as loan debts mount, says report

# Money fears 'encouraging drop-outs'

from William Norris
WASHINGTON

The student loan sysem in the United States has come under heavy attack in a report just issued by the Carnegie Foundation for the Advancement of Teaching. The report, prepared by Frank Newman, president of the State's Education Commission, calls for a "fundamental re-examination" of national policies towards higher education.

Excessive dependence on loans, says Mr Newman, leads to distorted career choices. A well-paying job right after graduation becomes a necessity, graduate school looks less attractive, and graduates with heavy debts are less likely to take entrepreneurial risks.

He claims that the system tends to keep minority students out of college altogether, and inadvertently to undercut traditional values. "Working one's way through college is a cherished American concept that conflicts head-on with 'go now, pay later'."

Mr Newman's recommended solution is a curtailing of the loan schemes in favour of increased grants and federally financed work-study arrangements. Work-study, he says, not only helps a student to pay for his college education, it also encourages the development of the values students need in society and gives the opportunity to create public-service roles for students both on and off campus.

Overall, he calls for an increase in student aid – an answer to critics who fear that his arguments against loans might be used by the Reagan administration to justify cuts.

The report, entitled *Higher Education and the American Resurgence*, is critical of the materialism of today's students. "By every measure we have been able to find," says Mr Newman, "today's graduates are less interested in and less prepared to exercise their civic responsibilities."

He has a cure for that, too, proposing a programme of public-service teaching fellowships, modelled on the Reserve Officers Training Corps, which would "encourage better students to enter the teaching profession, help the disadvantaged enter professional fields, and prove the opportunity for young men and women to undertake important social tasks."

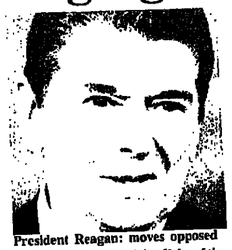
Concerned by falling enrolments of blacks and Hispanics, Mr Newman urges higher education to do a better job of drawing people from all segments of society into programmes leading to positions of leadership. "Both economic development and civic integration require the full participation of more than just an elite, particularly a white elite," he says.

To achieve this, he calls for the creation of a new federal agency – the National Opportunity Fund – which would provide grants to programmes for disadvantaged students, emphasizing those that linked colleges to high schools.

American higher education is broadly condemned as being too passive. "Students too frequently sit passively in class, take safe courses, are discouraged from risky or interdisciplinary research projects, and are discouraged from challenging the ideas presented to them."

"College education," adds Mr Newman, "is nowhere near as exciting or as effective as it could be. In many ways it is boring, particularly the classroom part."

Colleges are taken to task for paying too much attention to the technical expertise needed for new careers, and not enough on "whether graduates will have those capacities beyond technical expertise, or even beyond intellectual skills, that are now critical – the ability to be creative, the willingness to take risks, and the desire to participate constructively in the civic affairs of the country."


President Reagan: moves opposed

Civic responsibility, Mr Newman claims, is even more important than the need for economic growth. "There is today a dangerous, growing mismatch between the country's urgent need for civic-mindedness and the parochial attitude of its citizens.

"The intense demand for economic renewal or the even more pressing need for social and political renewal requires a far greater sense of public purpose. Yet in the face of growing complexity and danger in the problems facing American society, there are clear signs self-interest is undermining public interest."

In support of his claim, he cites evidence that college freshmen today appear to know less about the American political system than freshmen did 15 years ago, and that they are more likely to put personal goals ahead of social goals.

"There is a sizeable task ahead for higher education in the civic education of its graduates," says Mr Newman.

Coming from such an authoritative source, the report is likely to have a considerable impact, especially since Congress is currently debating the renewal of the omnibus Higher Education Act.

Much of it will not be greatly to the liking of the Reagan administration, especially Mr Newman's plea for a reduction in the proportion of federal support for defence research – currently at an all-time high – and an increase in support for areas of advanced technology that have commercial significance.

# Confucius returns to Chinese curriculum

by Geoffrey Parkins

**Confucius (551–479 BC), China's greatest ancient philosopher whose thinking dominated the country's education for 2,500 years, until his teachings came under attack earlier this century is being rehabilitated by the Chinese.**

**To do justice to the fifth century BC sage who taught the doctrine of "the way", a Confucian Research Institute was opened in Peking earlier this month which will study and evaluate Confucian doctrine and ethics. The institute, whose president is Zhang Dainian, professor of philosophy at Peking University, aims to give credit to Confucius for his immense contribution to Chinese history, and ascertain the relevance and usefulness of his ethical doctrine to modern China.**

**The institute is being sponsored by the People's University in Peking, the Shaanxi Teachers College and the Qufu regional government where Confucius was born.**

**Confucius, was often adored by China's emperors down the ages as "the holiest sage and foremost thinker", said Professor Zhang. However, since 1919, when a group of intellectuals calling themselves the May Fourth Movement vehemently attacked Confucianism along with other traditional ideas, the doctrine has been continuously criticized and discredited.**

**The fiercest attack came during the cultural revolution when Confucianism was denounced as feudalistic and positively harmful to China's social progress. Professor Zhang said, however, that the attack on Confucius, particularly in the 1960s, was "presumptious and ignorant" and should be "totally repudiated".**

**But, despite the very harsh treatment that Confucianism has received this century, it remains deeply rooted in Chinese culture and has gradually but surely re-established itself within respectable academic circles.**

**Now there is a clear endeavour by many academics to revive a more "classical and liberal" philosophy of education. One academic spoke of the dangers of a fast developing**

China which lacked a moral code or spiritual centre.

**Of particular significance in this respect is the emphasis Confucius's doctrine places on the development of moral character by education, on a benevolent attitude and sense of obligation to one's parents, elders and to one's fellows generally.**

**Confucius held out no promise of reward in this life or the next, but advocated the pursuit of "goodness" for its own sake.**

# More seek jobs abroad

from John Walshe
DUBLIN

More Irish graduates found employment at home last year but more also went abroad to work. This is the picture that emerges from the latest survey of over 12,500 recipients of degrees, diplomas or certificates last year.

Emigration is still an emotive word in Ireland and some college representatives have sought to play down the significance of the "brain drain" revealed in the survey published by the Higher Education Authority.

It shows that of the primary degree holders 11.4 per cent got work abroad, an increase of 5 per cent in one year, while for higher degree holders the percentage was 16 per cent. Nearly as many engineering graduates obtained work abroad as in Ireland.

However, the figures include some overseas students returning home as well as Irish graduates sent abroad by multi-nationals based in Ireland.

The encouraging information in the report is the increase in graduate employment by manufacturing industry. This increase was against a background of worsening unemployment and a further reduction in the numbers generally employed by industry.

The jobless rate for primary degree graduates was down to 6.1 per cent and for higher degree holders down to 3.4 per cent. For sub-degree recipients, those with diplomas or certificates from the National Council for Educational Awards the jobless rate was down from 17.8 per cent to 9.8 per cent.

The improvement is partly as a result of a change in the date of the survey from January to April of the year following receipt of the awards.

# Weapons seized on campus

The Bangladesh security police claim that "huge quantities of lethal weapons and explosives" were discovered during a recent raid on three halls of residence at Dacca University.

According to the minister of the interior, Major-General Abdul Mannan Siddiqi, the raid which took place at dawn on September 13, had the "unanimous" backing of all sectors of society, including teachers, students, politicians, parents and guardians, who wished the universities to be cleansed of disruptive and armed elements, so that students could pursue their studies in peace.

During the raid, 89 young men were taken into custody, of whom 60 were subsequently released on bail when identified as genuine students by the authorities of the raided halls. The other 29 were taken into police remand.

According to the police, many young men unconnected with the university had taken up residence in the halls, and were destroying the academic atmosphere of the campus.

# California's billion dollar ring

The largest particle accelerator in the world – 20 times more powerful than any now in existence – is being planned by the University of California. The machine, to be known as the superconducting super collider, will be between 20 and 30 miles in diameter and will cost an estimated 3 billion. The annual operating budget will be around $250 million.

The accelerator will consist of a ring of powerful magnets, buried in a concrete tunnel at least 20 feet underground. On the surface will be a research centre and about six observation buildings scattered around the outer edge of the ring. Three possible sites are currently under investigation – one each in northern, central and southern California.

Site investigation is expected to be completed by the end of this year. Once complete the SSC will have a staff of 2,500, with accommodation for a further 500 scientists from around the world. They are expected to get the closest look yet at the building blocks of matter.

Despite its size, the SSC is expected to have little impact on the environment. The area in the middle of the ring will be undisturbed, and no restrictions will be placed on its use. Accelerators produce no radioactive waste.

# Academics' pay award gives rises of 19 to 36 per cent

from Lindsay Wright
WELLINGTON

Salary increases of between 18 and 36 per cent have been awarded university academics and top administrators in a pay settlement by the Higher Salaries Commission.

Chaired by top lawyer and former Victoria University chancellor Mr R. S. V. Simpson, the commission has released details of its first pay advice in four years covering top civil servants, politicians, top public servants and local body administrators as well as university staff, and giving pay increases to some 8,000 top sector employees.

Professors get the biggest increases with a new scale giving them between $62,000 and $77,500 (a rise from $45,319 to $56,602) while medical and dental professors will receive between $80,000 and $87,500.

Readers and associate professors currently on $40,995 will receive between $53,000 and $59,000; the new senior lecturers scale runs from $37,000 to $47,000 (it was $29,430 to $37,240); the lecturers scale is from $28,000 to $35,000 ($23,622 to $27,928); and junior lecturers will receive between $20,000 and $24,000 ($17,698 to $20,489).

A salary bar previously at $32,682 in the senior lecturers scale has been removed which will enable staff in this career bracket to move automatically up the scale.

Vice chancellors go from $67,882 to $90,000 and the chairman of the University Grants Committee to a salary of $92,500.

Behind the increases is the concern that has been mounting over the loss of key public servants and university teachers to the private sector where total remuneration packages steadily increased over the past four years even during the wages and prices freeze imposed by the previous government.

University commerce faculties and computer divisions have faced serious problems in retaining and recruiting staff as outside salaries offered have looked more and more attractive.

The bonanza for academic staff is not yet over. An interim 8 per cent general salary increase in the public sector is due in November and the introduction of a 10 per cent goods and services tax in October next year will be accompanied by substantial income tax reductions.

# Awards

## Higher Education Links UK–USA

## British Council and Fulbright Awards

In order to increase American/British mutual understanding, a number of grants will be made towards the travel and subsistence expenses of approved higher education collaborative projects. Preference will be shown to proposals involving institutions which have not hitherto been heavily involved in exchanges and which emphasise movements by younger academic staff. Priority for British Council awards will be given to proposals for institutional links in the humanities and social sciences whilst Fulbright grants will be for head-for-head exchanges lasting an academic year.

Revised closing date 1 November 1985.

Further information and application forms are available from either:

The British Council
Higher Education Division
10 Spring Gardens
London SW1A 2BN
Tel: 01-930 8466 ext 2722

The US/UK Education Commission
6 Porter Street
London W1A 2LH
Tel: 01-486 7697

The British Council

In the second part of his series on improving job prospects, John O'Leary looks at the importance of the careers advisory role

# Lighting on the perfect match

Undoubtedly the most important and intriguing development of the moment in the graduate employment field is the proposed Computer-Aided Career Guidance System (CACGS). After four years of debate and exploration, the project has been given the go-ahead by the Government, a consortium has been chosen and negotiations over contracts are in their final stage.

The system will transform the business of both choosing the most suitable career and finding a job within it. It will place Britain in the forefront of modern guidance methods and, if it works, open the door to computerization for other categories of job-seeker. And, on top of all that, it should pay for itself.

Some time next year the first students should be sitting down at a microcomputer and plugging into a mine of information on some 450 occupations, perhaps 3,000 postgraduate courses and more than 1,000 employer organizations. Although the system is designed to complement the work of human careers advisers, in theory a student could arrive with no idea at all of an intended career and leave with all the necessary details on a particular vacancy.

Assuming that there are no last-minute hitches and the contracts are signed, the system will be developed by a grouping composed of the London University careers service, Queen Mary College and Scicon Ltd, the computer firm. The mixture of educational and technological expertise was demanded by the Department of Education and Science when it invited tenders for the project last year.

The scheme has been backed by the Government to the tune of £630,000, which will pay for the design and development of the system, a certain amount of hardware and a three-year pilot programme to iron out the bugs. After that, as things stand, CACGS is expected to be self-supporting through the subscriptions of the higher education institutions which use it. The pilot will be carried out in a limited but representative range of institutions and it will not be until 1988 that the system could be available more widely.

**The root cause of improved job prospects for graduates lies in changing requirements in the labour market, but higher education careers advisers should take some share of the credit. Perhaps spurred into action by the bleak employment outlook of the early 1980s, most have moved with the times to introduce new methods and schemes to give students the best possible chance of finding work.**

**Job-seekers are being steered towards fewer, better targeted applications. And, to judge from the experience of some of the larger employers of graduates, the message is getting through. Multiple applications in a variety of different fields of employment are becoming much less common and employers have remarked upon a higher standard of application.**

**Careers services in many universities have had to take their share of the cuts, although they have remained roughly constant in the public sector. And this, too, has encouraged collaboration and innovation. Information is shared in a number of different schemes, three of which are examined here.**

The University Grants Committee and the National Advisory Body have each promised £20,000 towards the cost of the project, underlining the widespread support for the venture. Although there is no financial commitment beyond the pilot project, it is hoped that eventually all students in universities, colleges and polytechnics will have access to the system.

It was a technology forum organized in 1980 by the Association of Graduate Careers Advisory Services which is now credited with launching the initiative. Some CACGS members, aware of similar developments in the United States, had been convinced for some time that the age of the computer had arrived in careers counselling, and the formal bid for support found sympathetic ears at the DES.

The association devoted a fair amount of its own money, as well as time, on formulating a proposal but recognized early on that it could not hope to pay for the development of a system itself. Although not an expensive project by Government standards, its approval in such straitened times reflects some determined support within the department as well as the quality of the proposal.

The two main forerunners of the system in the United States have been closely scrutinized, to the point of arranging an extended loan of the database for one. Indeed, consideration was given to simply buying into one of the American systems but it was decided that too many modifications would be needed for this to be worthwhile and that the state of the art had moved on sufficiently to make a genuinely superior system possible. All sides involved in the project are confident that such superiority will be achieved, even though ministers have opted for a somewhat less sophisticated operation than some of the contenders for the contract.

Among the 13 full proposals elicited from more than 100 initial inquiries were both cheaper and more expensive systems than the one eventually chosen. If double the money had been available, a fully "expert" system could have been chosen which would have had the capability to make intelligent assessments of suitable career paths.

But the Scicon package was judged to fit the bill at the right price. Programs devised on the mainframe computer at QMC will be available locally on micros to help students in eight areas:

- understanding the career planning and decision-making process;
- identifying or clarifying their values, interests and abilities with the aid of objective testing;
- exploring information about possible occupations;
- getting information on postgraduate courses and profession training;
- learning how to choose appropriate career goals;
- finding out about employers in a chosen field;
- seeking out current vacancies;
- planning an appropriate course of action to land a job.

Although the degree and mode of psychometric testing used in CACGS has still to be determined, this will form an important part of the new system and represent an advance on the American equivalents. Mr Peter Pierce-Price, consultant to the project and former head of the careers service at City University, who carried out the original feasibility study two years ago, was determined that the system should be inter-active to get away from the concept of a "box of tricks" which would prescribe the perfect career without involving the student in the final choice.

The system is intended to stand on its own and to require minimal computer literacy, while being both compatible with and complementary to other careers services. It is not intended to replace careers officers but to free them from the grind of preliminary interviews to concentrate on more sophisticated counselling, often following up ideas flowing from encounters with the computer.

Mr Brian Steptoe, head of the careers service at QMC and a prime mover in the project, hopes that computerization will encourage some students who have traditionally shunned organized counselling to seek advice. "It will mean that going to the careers service ceases to be any big deal," he said. "And students can then go on to interviews much better informed."

Enthusiasts for the system in AGCAS see it expanding before long to help less highly-qualified adults or those sitting A levels. They also hope to see it act as the model for a European advice system – a possibility which will be under discussion at an EEC conference in Brussels in November. Those more immediately involved in the project will be happy just to meet the immediate deadlines for completing the design of the system and getting the pilot projects under way.

## Sheffield steals a march on jobs

**Gone are the days when a careers service's main concern was to look after the milk round and students with narrow employment demands could be left to fend for themselves. Special schemes exist to cater for the requirements of both students and employers who do not conform to the traditional profiles.**

**A scheme introduced by Sheffield University last year and now running in a number of other regional centres kills two birds with one stone, both looking after students who want to remain in or return to the city and serving the needs of small businesses. Known as the Sheffield Gateway Programme, the project was funded by the Manpower Services Commission and has proved remarkably successful both in placing graduates and in opening up a new field of employment.**

**The programme was established with three aims: to help the development of small businesses, increase the number of recent graduates going into such firms and to create new job opportunities in small businesses through successful projects. The organizers are claiming success in all three departments, and have also seen the desire of a number of graduates to remain in the area fulfilled.**

**Of 13 graduates completing the first programme, seven are known to have received job offers from their placements and a number of the firms involved have acknowledged the benefits they received from taking a graduate for the first time. The largest of the participating companies employed 270 people, the smallest only two.**

**Some 300 graduates applied to join the programme and more than 60 companies expressed interest in participating. Both fields were whittled down by the organizers until 16 graduates were chosen for a two-week residential course and sent out on six-month placements doing everything from market research to the introduction of computerization. Two left during the programme and a third found a permanent job.**

**A second programme, modified as a result of experiences in the first, has recently begun. This time 25 graduates (and companies) are taking part and the course has been reduced by three weeks. The format is expected to be followed in a number of other courses, which will extend the range of opportunities open to graduates and, the MSC hopes, broaden the horizons of small businesses.**

Left to right, Tony Collis, head of careers service, University of Nottingham; John Mann, equal opportunities division, IBM UK; Brian Davey, Chris Little, careers advisers, University of Nottingham. Seated, Elisabeth Standen.

## A databank investment for the disabled

**Finding a job may be getting easier for the average graduate, but a degree is no passport to employment if you are disabled. Even those who are lucky or persistent enough to find work often have to take posts which do not make use of their skills and qualifications, leading inevitably to frustration.**

**Now modern technology is being harnessed to give disabled graduates the best possible chance of landing a rewarding job. A team of dedicated enthusiasts at Nottingham University are building on 15 years of work there to provide an information network serving employers, careers advisers and the graduates themselves. The project recently won unanimous backing from the Association of Graduate Careers Advisory Services and there is a good chance of raising the money necessary to put the system on a permanent footing.**

**At present, two researchers are developing the service on poorly-paid, one-year contracts funded by the Manpower Services Commission. An approach is being made to the EEC to establish a more permanent arrangement, but matching funding would have to be raised for the project to qualify for support. The ultimate aim is to have a self-financing bureau.**

**Already the case histories of 400 graduates suffering from a wide range of disabilities have been fed into the Nottingham databank. Some have been collected over 15 years of part-time work by careers advisers; others have been brought to light through recent survey work, or collaboration with organizations working for the disabled. Donations from 1981 Deloitte Haskin and Sells have enabled the information to be transferred to computer, which is ideally suited to the task.**

**The databank will soon be a boon to careers services, which cannot hope to have the specialist knowledge to undertake effective counselling for all disabilities, and will also allow students or graduates to discuss employment opportunities and problems with others who have similar disabilities. The system offers participants the choice of giving or withholding personal details, but most are only too willing to share their experiences.**

**A typical example is that of Paul Lindoe, a Trent Polytechnic graduate in public administration, who has cerebral palsy. He is unemployed after completing a project at the polytechnic on which he worked as a research assistant. He has shown that he can cope with a job successfully but has not found permanent employment in personnel, accountancy or the various research fields he has tried so far.**

**The Nottingham unit already has a range of graduates in similar positions to Paul offering their own suggestions to help him find work. But Brian Davey, one of the two full-time researchers is anxious to hear from more disabled graduates who are willing to join the service. He is also conducting more specialized research into the problems presented by mental illness, while his colleague Elisabeth Standen, herself a disabled graduate, is looking into the effects of multiple handicap. Both can be contacted at Nottingham**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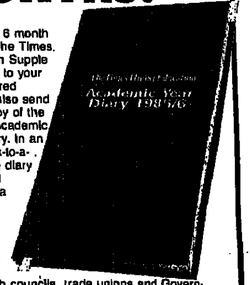


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Bristol's relative well-being contrasts strongly with Handsworth

# A tale of several cities

**Birmingham comes out top of a new index of deprivation produced by the ESRC in a timely report on inner cities. Paul Flather reports.**

The city has always had a bad press in Britain. Ever since the industrial revolution the cities have had their critics including such luminaries as Arnold, William Morris, and Ruskin. At various times the city has been seen as an erupting sore, a source of political challenge, a centre for dirt and decay, a destroyer of the simple rural idyll.

Of course cities have also been seen as the symbol of economic progress, the engine for growth and prosperity. But there is little doubt which image holds more sway today. Riots in St Paul's, Bristol, Brixton, Toxteth, and Handsworth are only the tip of the iceberg. The British inner city is in crisis after 15 years of almost continuous decline.

Of course there is no single explanation for this decline. High unemployment, the collapse of manufacturing, worsening social conditions, and racial tension have all played a part. But it cannot be mere coincidence that inner Birmingham comes out top of a new index of social deprivation produced in a timely report from the Economic and Social Research Council.

The index appears in a summary report published last week revealing some of the findings from the council's £580,000 three-year programme which set out to analyse the causes of inner city problems. The programme followed a series of reports done in the 1970s which culminated in a final report by Peter Hall, published in October 1981 urging further research putting the plight of the inner city in a broader context and drawing out some specific policy recommendations.

Despite the increasing resource problems being faced by the council at the time a three-year initiative was quickly agreed, not surprising against the background of the 1981 riots. The plan was to discover what was really happening in inner cities by contrasting the stories of declining urban centres with that of one that had been successful. Bristol was taken as the axiomatic success story to be contrasted with Clydeside, the West Midlands, and two different sections of London, the West and inner south east. The Department of the Environment then stepped in and funded a fifth parallel study of Gateshead, Newcastle.

The programme has been run under the auspices of the environment and planning committee of the ESRC, chaired by the enthusiastic and driving Brian Robson, professor of geography at Manchester University. Victor Hausner, an American with some years' experience working for New York City and the US government, now senior visiting fellow at the Policy Studies Institute, was appointed overall director, and teams from the universities of Glasgow, Birmingham, Bristol, Newcastle, Kent and the PSI, were selected to carry out the studies.

At the same time a series of national thematic studies were commissioned, for example looking at declining labour markets, public expenditure effects, local authority initiatives, and the capacity for economic development. In short it has turned out a blueprint to "Save the City".

The research was completed this summer and the council's appetizer clearly points up the seriousness of the problem. It is full of disturbing statistics demonstrating the decline of inner cities between 1951 and 1981. While all urban employment has fallen in those 30 years, it has fallen by 45 per cent in inner cities. One million manufacturing jobs have been lost, with another million lost in suburbs and free-standing cities.

The six large conurbations under scrutiny had lost 35 per cent of their working age populations in this period, and analysis of census data also revealed that social conditions worsened the closer one moves to the urban core. The most startling discovery, at least for policy-makers, was probably that by 1981 almost 40 per cent of all inner city jobs had been filled by commuters. The figure for Birmingham is even more striking: just 17 per cent of new jobs went to inner city residents.

The material on the West Midlands paints a grim background to the recent Handsworth disorder. In the 1960s the city was at the top of the regional earnings league, but by the 1980s it was almost bottom. In the decade up to 1982 the 26 largest companies had cut their labour force by 40 per cent. From 1978 to 1981 employment fell by 10 per cent. Then in 32 months from 1981 to 1983 156,000 jobs were lost, more than 85 per cent from the five key manufacturing sectors of motor vehicles, metal goods, metal manufacturing, mechanical, and electrical engineering. By 1984 unemployment in the West Midlands was 17 per cent, but in 10 Birmingham wards it was more than 30 per cent, and in three it was more than 40 per cent.

The picture is familiar, but why has it happened and what can be done about it? These were after all the specific aims of the research and it has come up with some significant conclusions which Hausner and Robson now want to feed into the policy-making arena. The report speaks of a "trilogy of environmental, dereliction, social malaise and economic distress" which has hit inner cities. But as Hausner points out there are more identifiable reasons for the inner city crisis.

Firms have been discouraged from moving into inner cities because of the increasing pressure for office and residential space which has pushed up prices. Inner cities have had to carry the brunt as manufacturing throughout Britain has declined. Firms are now much more interested in horizontal integration, diversifying in a variety of different areas, rather than linking all their production processes vertically, as close as possible. Better transport and telecommunications have allowed companies to spread out. Finally, as people have prospered they have opted for better rural amenities such as green grass and space rather than remaining close to the urban core.

For all those historic reasons the inner city has suffered. But the studies also show how national and local factors have made the position much worse. They highlight the unintended consequences of public policy that have hit the cities. Thus rate-capping local authorities, a policy to cut public expenditure, has hit the one growth area of spending in cities over the past 15 years, the public sector industry. Then the creation of new jobs through the various urban aid and partnership schemes being pursued by the DoE have simply not helped those in most need. Usually the better off commuters have moved in to take up the jobs. Clearly the targetting of regional aid needs careful review.

Again there has been no coordination between the various arms of regional aid. Training programmes run by the Manpower Services Commission have not always matched the job creation aid going to industry. Housing aid has certainly not gone to those worst placed in inner-cities.

One of the most interesting illustrations of the unintended results from Government policy came in the Bristol study. Bristol was a success because its manufacturing base declined slower than elsewhere; because the service sector expanded; because female employment rose rapidly to offset the huge decline in male employment; and because companies were happy to move down the M4 "high tech corridor". In fact unemployment tripled in the 1970s but it was still much lower than in other inner cities. But the real reason for Bristol's relative well-being was the huge defence expenditure channelled into the region.

Birmingham of course has no such hidden back-up. Indeed national policy has clearly made things worse. The collapse of its seemingly once impregnable manufacturing sector, consisting of a few large companies also hit all small, dependent, firms very badly. The motor industry suffered by being used by the Government as a regulatory tool for national demand management. Local factors such as an initial land shortage, poor industrial premises, and inefficient working practices developed when labour was scarce, all compounded the city's troubles, the report says. International factors such as the end of the Commonwealth trading preferences also hit Birmingham badly.

These summary findings were presented by Hausner and Robson at a meeting last week. But as Robson stressed, the real work will come in developing a dialogue with the policymakers. A series of joint seminars between the researchers and civil servants are planned for November aimed at persuading the DoE to develop a new firm, long term, better resourced, interdepartmental, strategy to deal with the urban crisis.

There will probably be little difficulty in persuading civil servants of the urgency of the problem. Indeed Mr John Delafons, the DoE deputy-secretary responsible for planning and inner cities said he was looking forward to studying the findings. But he is at present himself locked in the bilateral discussions with the Treasury fighting to preserve his existing annual urban aid budget of £338m.

There is some useful ammunition in the study for Mr Delafons and his colleagues. First, the problem is no longer just one for inner cities. It is a national problem that goes far beyond the spatial limits of inner cities. Second, policy-makers will have to sort out the intended and the unintended consequences of public policy on urban centres. Third, it is clear that even if there is a national economic upturn there is no likelihood at all that the plight of inner cities will improve. Fourth, there will have to be far more definitive targetting of urban aid to those in most need. Fifth, there is currently a major discrepency between the amount of effort at national and local level aimed at inner cities and the huge scale of the problems.

Finally, and probably most important of all, the study shows there is no contradiction between social expenditure and economic growth, one of the main tenets of current Government economic policy.

*Changing Cities* by Victor Hausen and Brian Robson, £2 from the ESRC, Temple Avenue, London EC4Y 0BD

# Banking on data

**David Jobbins examines a new project aimed to apply academic research to the revitalization of industry**

A commercial data base of research activities in Britain's universities and polytechnics, to be launched in the New Year, stems directly from the Prime Minister's insistence that academics' discoveries should be available to help revitalize industry.

British Expertise in Science and Technology is to be operated by Longmans Cartermill, part of the Longmans publishing group.

It is originated in the report of a working party set up by the Advisory Council for Applied Research and Development at Mrs Thatcher's request in 1982.

The working party, chaired by Sir Alan Muir Wood, concentrated on direct incentives, proposing funds for pump-priming and incentives for winning industrial contracts.

But as well as making active recommendations, it realised that a substantial amount of research currently under way, together with a vast degree of expertise which could be tailored to the specific needs of individual companies, could be of use if only industry knew it. The missing mechanism was one by which industrialists could find academics to aid their enterprises.

The working group suggested a sophisticated form of computer dating with academics feeding in details of their work to a central data base. Companies could either buy the entire file for frequent references or smaller firms could have searches conducted for them.

It so happened that the University Directors of Industrial Liaison (UDIL), an informal grouping with no formal status within the system, took up the initiative. They established their own working group to devise a scheme, and still without any form of approval from the vice chancellors put the proposal out to tender.

Longmans Cartermill was successful with its tender, which was accepted by UDIL. It was only at this stage that the formal involvement of the vice chancellors through the Committee of Vice Chancellors and Principals (CVCP) was sought.

A senior official said: "UDIL could not commit the universities themselves to any involvement. It was up to the CVCP whether universities should go into this enterprise."

The polytechnics, anxious not to be left out, also became involved to broaden the data base.

The CVCP gave support in principle for the scheme last year and the process of data collection is now under way. The CVCP told universities it could see no reason why data should not be collected from academic staff and conveyed to Longmans Cartermill. But the data could be withdrawn if they were unhappy with a code of practice governing the handling and use of material still under discussion.

In the public sector Mr Geoffrey Holroyde, director of Coventry Polytechnic and chairman of the industrial links liaison group of the Committee of Directors of Polytechnics (CDP), similarly gave the go-ahead to his fellow directors.

In the universities some concerns about the data base were voiced by the group representing registrars and secretaries. These are being considered by the CVCP's university/industry co-operation group.

Earlier this year, Longmans Cartermill invited universities and polytechnics to begin compiling the information needed to build the data base.

Managing director, Michael Toberts says that they have received data from 40 universities and 28 polytechnics and are reaching between 53 and 55 per cent of academics working in the target areas of science and technology.

"From the way it is going it looks as if we will get very close to 100 per cent of institutions," he said. He has yet to hear from four or five institutions but believes they will join.

The company was aware that a simple listing of names and research interests would not be sufficient. Academics are being asked to supply details not only of their research but a great deal of background information covering experience, work with industry in the past, previous research work and a "top three" list of publications which best demonstrate their expertise.

"We are producing a record of human research stock," Mr Toberts says. "We think we will have enough entries to be able to launch at the end of the year."

The data is stored on what the firm describes as a "middle of the range" super-mini computer backed up by an extremely powerful information retrieval system. This will create a "multi-dimensional index" which subscribers will be able to use to search for specific interests in any geographic area.

When the questionnaires are received at Longmans Cartermill's base at St Andrews in Scotland, the entries are vetted by teams of editors from nearby universities. They are then returned to the academics concerned for a final check for accuracy before being fed into the computer. The aim is to sell the entire data base to individual subscribers, essentially large companies with wide interest. Alternatively Longmans Cartermill will conduct searches for small companies reading less frequent references. The charges will fall on the user companies not on the institutions.

Academics will also be able to use the data base to find possible collaborators or to avoid clashes in research interests. A small fee for handling charges and to deter frivolous use will be charged.

Their access is guaranteed under the code of practice which, should be sufficient to safeguard the data base from abuse.

A code was suggested by the CVCP's industrial links working group as a way of avoiding pitfalls indentified by university registrars and secretaries. It will regulate the relationship between subscriber universities and the data base on the conditions on which material is supplied and withdrawn. It exists in draft sending legal advice sought by the vice chancellors.

Some sources suggested that a legal constraint beyond a voluntary code might be needed. The balance of opinion within the CVCP is that a code is sufficient. The solution will probably lie in a form of words which will allow institutions simply to cease to supply data if they find grounds for dissatisfaction.

Existing information will quickly become outdated and the value of the data base diminish – an effective sanction against the company to oversee its operations. Two committees have been established. The most important is an independent advisory committee chaired by Sir Alistair Pilkington which will consider the wider issues. It also includes Sir Geoffrey Allen, former chairman of the Science and Engineering Research Council; his successor, Sir John Kingman; Professor John Cadogan, the director of research at British Petroleum; Professor Derek Smith, the chairman of UDIL; Professor Stephen Bragg, a former Chief Scientist and vice chancellor of Brunel, now head of Wolfson College industrial unit and Professor Laing Barden, director of Newcastle Polytechnic.

A liaison committee has also been set up with representation from the CVCP and CDP.

A word of caution has come from the Association of University Teachers, which is advising its members to ensure information they supply is used only for the data base and not for other purposes.

# Welding of brains and industry

Donald Fields on Sweden's science parks, likely to be given a boost by the reelection of Olof Palme's government.

WORLDWIDE

The election of Mr Olof Palme's government for a new three-year term is unlikely to result in appreciable changes in higher education policy in Sweden. But with the ruling Social Democrats no longer exceeding the combined strength of non-Socialist parties and relying more on either Communist acquiescence or horse-trading across a broader political spectrum, general economic management could rub off on academic life.

The renewed mandate offers a chance to take stock of the Social Democrats' pragmatism exemplified by a welding of academic talent and industrial interests. This has been seen in the spread of scientific research in the shadow of old universities and the sprouting of business-oriented institutes emblazened with the magic word *högskola* – the name given to any unit covered by Sweden's spacious concept of tertiary education.

One thriving enterprise is located near Lund University. It has been designated the country's first technical village. Built like a glossy industrial estate, in the three years since the Social Democrats replaced the non-socialists' this has all the headstrong qualities of Silicon Valley.

It is growing as fast as the beanstalk, excavators scouring fresh foundation lines as soon as new blocks are completed. Household names are among the score of companies that have moved in, establishing their own spin-off operations in electronics, chemistry and biotechnics. Even though some of the research is highly specialized, there is a cross-fertilization of ideas to be expected close to a univerity.

A representative of a chemical and plastics company said: "Often young people reared in Lund's intellectual setting come to us with great ideas. We know they are technically excellent but their knowledge of the market is zero. So we start them off as consultants and use our experience to find potential users of their brainwave."

Not only individual industrial giants are attracted to the innovative atmosphere, as shown by the husband and wife team running Bohlin Reologi. He had been researching at Lund University. Hearing of the space available in the "village" they staked their savings in perfecting the instruments needed in their esoteric field, determined to outwit their main rival, an American company. She handled the business, he the scientific output.

For several years Sweden has been near the top of the world research and development league, and despite fiscal exigencies it is still forging ahead. It is perhaps not surprising that private enterprise and some state-owned companies are looking away from their large, well established laboratories to squeeze some drops of originality found in tiny and more flexible units.

Something akin to the Lund village has been founded at Linköping, along the road to Stockholm, and corporations are planned to stimulate similar developments at Uppsala, an intellectual cradle, and Lulea, just north of the 66th parallel. The Chalmers Technological University in Gothenburg runs its own "house of innvation."

Lulea is to open its doors to Sweden's first ever high school for businesswomen. Boosted by a contribution of almost £100,000 from a state owned industrial enterprise board, the institute, partly modelled on one in Norway, will give two-month courses to 15 women already established in business and a further ten just starting out. Based on "traditional" subjects such as business management, marketing and product development, its syllabus will extend to "women in society".

Announcement of the project coincided with the launch of a national organizatin for businesswomen who say it is difficult to find an outlet for their talents in male-dominated corporations and want to explode the myth that women are less ambitious than men. It came on the very day the equality minister, Mrs Anita Gradin, earmarked about £200,000 to "strengthen the position of women in the labour market", partly through education.

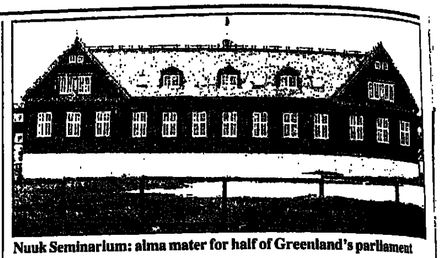
This and other moves help underline the growing partnership in Sweden between government and local authorities, business and educational interests. This summer the government announced schemes of this type covering the Kiruna iron-mining belt, inside the Arctic circle, and a central industrial area around Örebro. The respective regional university boards will do much of the spade work.

At Kiruna, supplementary education in space technology for civil engineers will be phased in during the first half of 1986, linked to the existing geophysical institute and a satellite-probe station. One aim is to restimulate a region hit by emigration.

Around Örebro several municipalities and companies have received government backing to plan a technical high school for 1000 students, the embryo of which could emerge next year. The guiding lights want to tap the excellent teaching resources available in the form of engineers and doctors of technology attached to local companies, and to cater for intense demand for qualified young personnel.

With some firms obliged to scour far and wide for promising technicians, the Örebro initiative appears to show how a harmonious combination of public and private interests can hoist the flag of tertiary education to the mast of regional, high-technology development.

This month feminists in Gothenburg have started an independent folk high school exclusively for women. Up to 80 pupils can study full time, with 25 children placed in day care in the same building. Though in no way comparable to extra-curricula university courses, this form of adult education shows how grassroots ideals can bring technical and other instruction to previously under-privileged groups, in particular immigrant women. It is hoped to steer 1000 women through crash courses each year.



Nuuk Seminarium: alma mater for half of Greenland's parliament

# Hunting, fishing or teaching?

Peter O'Neill on the dilemma facing Greenlanders trying to establish a national identity

One of the most domestically powerful teacher training colleges in the world stands slightly aloof in a red painted, classical timbered building just above the old harbour in Nuuk, Greenland.

Few educational institutions have produced comparatively so many political figures. Since 1979 when Denmark granted Greenland home rule, the Nuuk Seminarium College has played a role in the education of perhaps half of Greenland's 25-member parliament. But Greenland faces a sharp dilemma and education and a national language and culture are at the heart of it. Educational planning will decide whether the 42,000 *Inuits* (Greenlandic for "human beings"), will eventually be economically and socially independent.

As colonial powers go Denmark has been a good one. Colonial status ended in 1953 after 200 years. Large numbers of teachers, doctors and nurses arrived from Denmark. If Greenlanders were to move out into the world, then they needed education which would equip them for Danish institutions of higher education. That meant that they had to learn Danish at school and beyond. To succeed in a Danish university you needed (at least) English as well, for Danish is not an international academic language.

The university results were catastrophic. Ove Rosing Olsen, now 35, was the first Greenlander, in 1978, to graduate from a Danish medical school. He says the pressures to succeed were enormous.

Denmark still controls foreign affairs and defence and contributes a substantial subsidy, but areas like education policy are now under *Inuit* control. Subsidies for education and health will continue because Denmark wants to make sure it has a share in any long term mineral and oil exploitation.

A process of "Greenlandization" is well underway. The Nuuk college for teachers is a critical educational dynamo but through sheer lack of numbers Greenland cannot support a university. However, home rule has created a benchmark of academic excellence in setting up the Ilisimatusarfik, Inuit Institute. In essence, it will be Greenland's cultural and social think tank. Its brief is to conduct research and education in the Greenlandic language, culture and society.

Greenland will have to shop abroad for training for its doctors, lawyers, top managers and computer experts. This means that in Greenland itself, teacher training and vocational studies in nursing, engineering and construction will probably be at a higher level than in most European societies. The schools are well-equipped, and the *Inuits* going into service industries are certainly making the best of thousands of years of Eskimo wit and ingenuity. There are no official figures but officials estimate that home computer use is possibly the highest in the world.

Textbooks, films, videos and exams are all being adapted to emphasize Greenlandic history and culture in the schools and college. The centre masterminding this transition was the first unit anywhere in the Danish government system to be equipped with direct word processing to typesetting links.

Danish language content has been reduced drastically since 1980 when the new ordination act came through and Greenlandic has been given much greater emphasis. Yet half the country's approximately 450 qualified teachers for 11,000 pupils at school level are Danes, most of whom do not speak Greenlandic. In addition, there are some 250 Greenlanders (who receive some teaching skills) who teach economically important skills such as hunting, skinning, skin stitching and fishing.

Progress has therefore been considerable in building up the *Inuit* teaching corps. There are now a growing number of *Inuits* who are able to take over senior posts and therefore displace Danes. The tragedy is that both sides want to do the best by each other, but in the end the *Inuits* want to run their own house.

Unusual economic factors will hinder an increase in the number of Greenlandic teachers. Although the home rule government has replaced its former student loan policy with a 100 per cent student grant system requiring no parental contribution, teachers' salaries just cannot match the staggering earnings from short seasonal work on the trawlers and in the hunting industry. According to Ib Follin, educational adviser to the government, it is common to get double a teacher's salary on the boats.

But young teachers are caught in a trap of conscience. The lure of instant and big money conflicts with their commitment to building a new society. They must not only educate the young. They are a visible force in the battle against alcohol and the search for a return to *Inuit* values which have been swapped by people being herded into blocks of flats for convenience, and tackling the crisis of identity which is often seen in the high rate of suicides among the young.

The higher preparatory examination which was introduced in 1979 for students between 16 and 18 has made entry to college stiffer. It is also the passport which allows students to go abroad to university in Denmark. That means two years study for the HPE, then four years of teacher training. The period is too long and the government is proposing to reduce it by one year.

The paradox of the Greenlandic/Danish teacher relationship shows in union membership. Most of the Greenlanders are members of the Danish union rather than Greenland's. The latter is linked to the leftwing minority party, Inuit Ataqatigit, which has three members in the coalition government.

There may have been a serious tactical mistake in the 1950s says Ib Follin, who is married to a Greenlander. He recalls the argument which raged in the early 1950s over whether English should be the main second language for the *Inuits* so they could look towards North America.

Certainly the *Inuits* are developing English in the schools as an important subject. Further, it was not an accident that Premier Jonathan Motzfeldt was offered and accepted an honorary degree from the University of Alaska at Fairbanks last month, nor that *Inuit* professors there are in touch through the Inuit Circumpolar Conference which has its office in Nuuk. There are also academic links with McGill in Montreal and Saskatchewan.

The same applies for business studies. Today's young *Inuit* businessmen are trained in Denmark at the prestigious Jutland IKAST business college. They hated being "exported" and being away from their families for several years at a time.

Vocational training is seen as a critical plank of government policy. There is still extensive Danish control of service industries and the goal is to ensure that enough Greenlanders have the skills to take them over.

The government is canny enough to realize that it needs Danish expertise in all these fields. It is a measure of its foresight that it is employing a significant number of Danes in key positions who are demonstrably committed to building a new society.





N. C. Wickramasinghe on the search for life in the universe

# Life beyond earth

Could life be unique to the earth? In view of the obvious vastness of the universe such a proposition may be thought to be scarcely conceivable. The sun, our parent star, is one of some 100 billion sun-like stars in the Milky Way, and our Milky Way is of course just one quite ordinary spiral galaxy among billions of other similar systems.

To considerations of vastness should be added also the likelihood of stable planetary systems occurring around stars. Present-day estimates suggest that such occurrences are indeed probable, at least to the extent of providing billions of planetary systems which are suitable homes for life throughout the universe. Add further the fact that living material is made up of the commonest cosmically occurring elements such as carbon, nitrogen, oxygen, hydrogen and phosphorous, and one must conclude that a concept of life which is earth-centred must be dismissed as an untenable extension of pre-Copernican thought.

The quest for an origin of living things must be as old as man himself, and in the earliest days it must have been inextricably linked with superstition and religion. The first theory of an origin of life that might be described as scientific in the sense that it was ultimately amenable to empirical test was the theory of spontaneous generation.

This theory which is similar to early Babylonian ideas asserts that living systems emerge from non-living matter spontaneously under certain physical conditions without the intervention of any supernatural power. It is easy to see how this point of view came to be so widely held. The sight of maggots emerging in vast profusion from rotting meat and of worms and other small creatures crawling out of slime might seem to offer excellent *prima facie* evidence, even proof, for such a theory.

The Greek philosopher Democritus (460–370bc) argued that the world was filled with uncaused and eternal atoms which are in random motion in a void. The creation of life from slime was said to occur when "atoms" of moist earth encountered "atoms" of fire. Aristotle (384–322bc) and his disciples proposed that fireflies emerged from morning dew and that a wide variety of creatures arose spontaneously out of mud at the bottom of streams and ponds. Over the centuries there have been many illustrious adherents to this belief including Newton, Harvey and Descartes.

An Italian physician and poet named Francesco Redi was the first to attempt a serious refutation of spontaneous generation. In a famous study published in 1668 he showed that maggots do not form on decaying meat if flies were kept away, thus toppling what was hitherto thought to be crucial evidence for this theory. Claims and counterclaims for spontaneous generation continued to circulate among scientists and philosophers for nearly two centuries. In 1860 Louis Pasteur by means of a carefully controlled series of experiments was able to show conclusively that microorganisms that grew in certain nutrient media such as agar came from pre-existing microorganisms in the air, not from any mysterious process of spontaneous generation. Thus life seemed always to be derived from life of a similar form that existed before. Pasteur's discovery led not only to the birth of modern biological theory but also gave rise to the germ theory of disease.

Close on Pasteur's heels came the publication of Darwin's *Origin of Species* in 1861. This publication quickly asserted its influence by eroding the basis of earlier theologically oriented theories of special creation. The irrefutable fact of an evolutionary sequence in the fossil record on the earth, together with the theoretical framework now offered by Darwin led to a rejection of the earlier ideas of special creation. Evolution, mutation and survival of the fittest were then seen as a set of mechanistic processes that provided causal links connecting the humblest microorganism with the highest forms of life on our planet.

Modern ideas on the origins of life can, in a certain sense, be seen as a logical extension of the Darwinian theory. Biological evolution traces the history of life on earth back to a microbial ancestor, but could the same logic be extended to evolution at a chemical level leading backwards from microorganisms to simple chemicals? In the opinion of Sir Fred Hoyle and I, this last step would seem to violate the results arrived at experimentally by Pasteur and therefore could not be justified. Yet such a step was taken albeit with some trepidation in the early decades of this century.

The English biologist J. B. S. Haldane and the Russian chemist A. I. Oparin were independently the first to suggest that life arose from non-living inorganic matter under conditions that prevailed on a primitive earth. Their conceptual starting point was a mixture of simple inorganic gases (molecular hydrogen, methane, ammonia and water) either in atmospheric clouds or dissolved in the oceans. Such substances cannot be converted to complex organic molecules without the addition of high grade energy in some form. Ultraviolet light from the sun was therefore invoked directly or indirectly to break up the inorganic molecules into "energized" fragments. These reactive molecular fragments were then supposed to recombine to produce a trickle of organic molecules which could possibly serve as the chemical building blocks of life. Such building blocks may include amino acids which are the components of proteins and nucleotides which are the components of genetic material.

Several laboratory experiments have been carried out with a view to testing the Haldane-Oparin theory. In 1953 Stanley Miller demonstrated that small quantities of amino acids could be formed by sparking a mixture of molecular hydrogen, methane, water and ammonia in a laboratory flask continuously for a week. Some years later it was shown that traces of nucleic acid components and sugars could also be produced in similar experiments. Recently long strings of organic molecules (polymers) have also been synthetically produced. The main thrust of ongoing research, exemplified by the work of L. Orgel at the Salk Institute, is concerned with the search for a synthetic self-replicating protein-DNA or RNA system. Needless to say this goal has been far from realized at the present time.

Another experimental prop for the primordial soup theory was connected with the production of organic molecules in the laboratory using catalysts. This endeavour began to acquire a possible economic significance towards the end of the Second World War. Efforts of German chemists were directed at this time to the production of synthetic petroleum by passing a mixture of coal gas (CO) and hydrogen under pressure over heated metal catalysts. This process called the Fischer-Tropsch process after its inventors was found to be extremely inefficient and led to the production of hydrocarbons only in very small quantities. These early German experiments are now being cited by astronomers and geologists as routes for the formation of organic molecules by inorganic processes. The discovery of organic molecules in a class of meteorite known as the carbonaceous chondrite is often taken to imply that Fischer-Tropsch processes have been at work at birth of the solar system, although Sir Fred Hoyle and I have recently disputed these claims.

In the early 1960s evidence came to light that some of the organic matter in carbonaceous meteorites was present in shapes and forms that resembled fossilized microorganisms. This evidence was refuted by the majority of scientists on the grounds that some of the samples studied were contaminated by terrestrial microorganisms. This unfortunate development led to a general rejection of the possibility of extraterrestrial life in meteorites at this time. However, this exciting possibility has very recently been revived by microscopic studies of contaminant free meteoritic samples by the German geologist H. D. Pflug.

The first serious attempt to search for extraterrestrial life began with the Viking Mission to Mars in 1976. The Viking 1 lander arrived at a pre-determined location on the Martian surface on July 20 1976 and Viking 2 landed on September 3 1976 at a different chosen site. Experiments carried aboard the two Viking landers were designed to search for signs of microbial life. A robot arm equipped with a shovel at its end was used to collect soil into three separate experimental chambers. The experiments included the addition of nutrients to promote microbial reproduction. The nutrient was found to be taken up by the soil and such gases were released as one would expect from bacteria in terrestrial soil. What is somewhat surprising is that NASA scientists did not exclaim "eureka" at the sight of these results in the autumn of 1976. Instead they reported cautiously that although some of the Viking experiments gave results that were consistent with microbial life, one particular experiment designed to detect organic material yielded a puzzling result. It indicated that free organic matter was not present in the soil except perhaps to a trace amount. Although this latter result would conflict with the known behaviour of normal terrestrial soil where organic matter is undoubtedly abundant, it is fully consistent with the situation that prevails in the Antarctic. Here microorganisms exist in profusion but they tick over at a very slow rate and moreover efficiently scavenge free organic matter. The Viking experimenta were tested on Antarctic soil only after the completion of the Martian mission, and quite significantly the results were found to be identical in the two cases. One could thus infer that life exists on Mars, provided that a purely inorganic reconstruction of the Viking results can be ruled out. In 1976 NASA scientists appear to have made a policy decision to err on the side of caution. Thus a major effort was made in succeeding years to reproduce the Viking results using purely inorganic models. After nearly a decade of experimentation in the laboratory no possible model has emerged, so one has to infer that no inorganic reconstruction of the results is possible and consequently microbial life was discovered on Mars.

Let us next consider the question: how probable is the emergence of intelligence on a cosmic scale – intelligence compatible with either space travel or interstellar communication? The pessimist might assert that such intelligence must be unique to the earth because otherwise we would long since have been colonized by an alien civilization. This argument is not without fallacy. Human technology of 1985 permits of space travel it is true, but only in a limited context and reasonably only within the confines of the Solar System. It is not clear that further advancement of technology or further evolution of life would lead to a capability, let alone a desire, for large-scale galactic travel.

Radio communication is a different matter, however. We could attempt to listen in for broadcasts and messages from external intelligences and we could also beam radio signals in the directions of prospective planets. It is of course impractical to listen in or to broadcast signals at all frequencies and in all directions. So intelligent choices would need to be made.

A frequency that suggests itself is that corresponding to atomic hydrogen which is the most abundant element in the universe. Interstellar hydrogen emits radio waves at the frequency 1,420 MHz and it may be reasonable to guess that intelligent beings elsewhere in the galaxy might choose to broadcast near this same frequency. A choice of direction is more difficult. Starting in 1973 American astronomers B. Zuckerman and P. Palmer turned their radio telescopes in the directions of 500 nearby stars of types similar to the sun and used computers to store, analyse and search their data for hidden signals.

At the present time scientific programmes are being planned both by the USA and the Soviet Union to search the skies for extraterrestrial life through radio communications. Among these is the US project code-named SETI (Search for Extraterrestrial Intelligence) which was begun in 1976. So far we have not heard our first cosmic "hello", but it is far too soon to despair. What is amply clear from our recent scientific achievements is that man is now psychologically ready to contemplate life on a much vaster scale than the confines of his planet. Thus the question of how life originated on the earth begins to acquire a far greater importance than before and a more immediate relevance.

There is no logical requirement for life to have started *de novo* on our planet. The earth along with the sun and planets was assembled from cosmic material. The entire planetary system is now surrounded by billions of cometary objects in the form of a spherical halo, and every year several of these comets become perturbed into orbits that take them into the inner regions of the solar system, thus enabling them to encounter planets such as the Earth. Although direct collisions of the earth by comets are rare, the earth is estimated to pick up some thousands of tonnes of cometary debris every year. We know further that comets are very similar in their atomic composition to biological material. Just as Pasteur had found that the growth of microorganisms under laboratory conditions is governed by the pre-existence of contaminant organisms, could not life originate on earth by contamination from space-borne microorganisms?

The sun with its planetary system had its beginnings some four and a half billion years ago in a vast cloud of cosmic gas and dust. We know that new stars are born within such clouds, fragments of which condense to form stars with systems of planets and comets around them. The precise details of the processes involved in the spawning of new stars are not yet understood, but we know that myriads of tiny solid particles of radii about ½ of a micrometre, the average size of a bacterium, play a crucial role. They go into star-forming regions and emerge from the neighbourhood of newly formed stars in vastly amplified numbers. The millions of clouds of diffuse material that populate the Milky Way are filled with such particles, showing up as a cosmic fog, dense enough in many instances to blot out the light from distant stars.

Sir Fred Hoyle and I have been probing the properties of this material since 1962, and after many unsuccessful attempts at identification we now confidently affirm that cosmic dust is comprised of microorganisms, the seeds of life in the universe. Astronomical evidence seems to us to be quite overwhelming: The manner in which cosmic grains scatter, absorb, polarize and emit radiation clearly point to a bacterial composition.

Throughout the galaxy we estimate a total mass of $10^{33}$ tonnes of microorganisms in a freeze-dried condition at a temperature of about 25 degrees above absolute zero. During the formation of stars with planets and cometary systems the viable fraction of these microorganisms which are associated with the parent clouds serve as the cosmic legacy of life. The patterns of cosmic life first become incorporated into billions of icy cometary objects which occupy the outermost regions of the planetary system. These primordial microorganisms then multiply in large numbers within the watery interiors of comets. A fraction of the amplified number of microorganisms is returned to space when comets evaporate as they approach the central star, a fraction is mopped up by planets.

The earth has been the recipient of microorganisms from comets from the dawn of its existence as a solid planetary body. At the begining, hostile physical conditions precluded survival of any incident organisms, in the same way that microorganisms would now perish at the surface of the airless moon. Once the earth acquired its oceans and atmosphere, mainly from cometary impacts, cosmic life was able to take root. The moment of first arrival of viable life is probably close to the time of deposition of the earth's oldest sediments nearly 4 billion years ago. In the view of Sir Fred Hoyle and I the influx of cosmic microorganisms – bacteria, viruses and viroids – has continued long since have been colonized by an alien long almost to present day, causing diseases in plants and animals in some instances, and generally adding to the microbial flora of our planet. Finally, and perhaps most importantly, the evolution of living forms on our planet would seem to be primarily controlled by the steady input of new genetic information from cosmic microorganisms.

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# Patent battle of Aids researchers

Tension is growing between rival research teams on opposite sides of the Atlantic, one at the Pasteur Institute in Paris and the other at the National Cancer Institute in the United States, over which can claim to have discovered the virus now generally accepted as responsible for the disease Acquired Immune Deficiency Syndrome (Aids).

What started as a relatively conventional dispute over scientific priority has taken on a new dimension resulting from the fact that whichever team is granted patent rights to diagnostic tests based on the virus will be able to claim royalties from the sales of such tests, a market estimated at more than $150 million in the US alone.

Last week, officials at the Pasteur Institute – whose researchers claim that they announced their discovery of the Aids virus five months before the comparable discovery was made in the US – were threatening legal action against the US Patent Office, which has still not decided whether to grant a patent application which they deposited in December 1983.

As a result, the test based on the Pasteur research, which is being developed in the US by a Seattle-based company, Genetics Systems, has not yet been offered for marketing.

The Patent Office has, however, already granted a patent to the rival American team, headed by the prominent cancer research worker Professor Robert Gallo, and five separate US companies are currently licensing the patent to develop diagnostic kits based on Gallo's results.

The roots of the dispute go back to 1982, when Gallo first suggested that the agent responsible for Aids appeared to be a virus that he had been carrying out research on for some time, known as the Human T-cell Lymphotrophic Virus – or HTLV.

Early in 1983, a research team headed by Professor Luc Montagnier of the Pasteur Institute also isolated a virus which they had discovered in cell cultures taken from an Aids patient. Further investigation revealed that although this virus had certain similarities to HTLV, there were also important differences, and Gallo therefore chose to call his by a different name, Lymphadenopathy-Associated Virus (or LAV).

Gallo's group subsequently discovered that the virus they had isolated also revealed different characteristics from the two HTLV strains it had previously been dealing with, and decided to call the new strain HTLV-III.

By the beginning of this year, it had become clear that the French (LAV) and American (HTLV-III) viruses were almost identical to each other, with a variation of only 1.5 per cent in their respective nucleotide bases – a result which suggested that scientific honours might be divided between the two teams.

The fact that patent rights worth many millions of dollars through worldwide sales of diagnostic and blood-test kits are at stake, however, has made it increasingly difficult to achieve a scientific truce.

Montagnier and the Pasteur Institute, in forwarding their claim that, as the first to publish details of the Aids virus, they should be granted sole patent rights to all kits using the virus, are emphasizing the close similarity between LAV and HTLV-III on the one hand – and the differences between HTLV-III and the two previous HTLV strains discovered by Gallo on the other.

Gallo, however, who at one point seemed prepared to accept the similarities, now also emphasized the differences between the Pasteur strain and his HTLV-III – a difference which he must sustain if his own patent application is not invalidated in the US by the granting of a patent to the French scientists. He is also placing greater emphasis than Montagnier on the similarities between the three HTLV strains.

Following repeated protests from the Pasteur Institute over the delays in obtaining a decision on their patent application, a letter has been received from officials in the US Department of Health and Human Services – which is responsible for regulating all health products through the Food and Drug Administration – asking for more scientific information to back up its claim that its discovery takes precedent over Gallo's work.

Professor Raymond Dedonder, the director of the institute, says that he is still hoping that it will be possible to reach some agreement between the two scientific groups over how the credit should be shared. Indeed, representatives from both groups are expected to meet in Paris shortly to see if a common position on their relative claims can be reached that will allow both to share future patent royalties.

At the same time, there is also a growing feeling in Paris that the US government may yet decide to reject the Pasteur's patent application, and thus eliminate its chance of obtaining any royalties from the American market. To meet such an eventuality – or in case attempts to find a compromise position between the two scientific groups fail – Professor Dedonder says that the institute is already preparing for a legal action against the government.

A diagnostic test based on the Pasteur Institute's results has recently been marketed in France by the company Diagnostic Pasteur, established jointly by the institute and the pharmaceutical company Sanofi. The French government has also issued a licence for an American diagnostic kit which has been developed by the company Abbott.

**David Dickson**

# Ernest Boyer

# In search of a 'value added' yardstick

Governors and other politicians in the United States are beginning to ask tough questions about the quality of high education. They point to the student drop out rate - about half of those who enrol in college leave before they graduate - and to the low performance of some graduates, especially teachers, on national examinations.

Parents and students are asking questions, too. With sky rocketing costs, colleges are regularly queried about how the expenses relate to the benefits of higher education.

Every college and university supports the notion of quality education. They recognize the need for high academic standards and seek to provide a good education for their students. This is the ideal. But how is excellence to be measured?

In America, the customary way of evaluating colleges is through regional accredition. Through this procedure, higher learning institutions voluntarily join together to establish academic standards and evaluate the performance of each college.

There are six regional accrediting associations – Middle States, New England, North Central, Northwest, Southern and Western. These bodies ask college presidents, faculty and lay members to visit campuses within their region. Reports are then submitted to the accrediting bodies. Colleges are usually accredited for 10 years, sometimes less. Today about 2,900 colleges and universities are on the approved list. Another 300 are in the process of moving toward accredition.

Visiting teams look first at the mission of the institute and then examine conditions on the campus to determine whether college goals are being met. The check list includes: the number of volumes in the library, student-faculty ratio, the physical plant, PhDs on the faculty, the admission test scores of students, instructional budget, and the per cent of graduates enrolling in graduate school.

A more informal but still influential approach to higher education evaluation is done by scholars who rank programmes in their repective fields. Chemists, biologists and historians, for example, are surveyed to determine the best departments in the nation.

The results confirm the folklore. Some places are more prestigious and more highly regarded than others. But it is hardly surprising that the top-ranked institutions turn out to be large research universities that attract highly visible faculty who are known as first-rate researchers.

Another approach is to use the academic quality of entering students to rank and institution. Most such rankings employ standardized test scores. The problem with this kind of assessment is that it reports on the characteristics of students, not the quality of the college.

Monitoring college performance is important. But traditional measures used by educators tell very little about what happens to students. Accredition standards, for example, describe the resources available – libraries, laboratories, the academic preparation of professors – but offer slight information about how often and how beneficially students use these resources.

Today, in search of a better yardstick, a new approach to the college measurement is being pushed. It is called the "value added" method. While no agreement exists about what is meant precisely by "value added" many educators do agree that student development – intellectual and social changes – is the best measure of the college experience.

State legislatures and new governing boards are becoming actively involved in the new approach, driven not so much by educational mandates as by the urge to see that public money is well spent. In Tennessee, a percentage of the appropriation to public colleges in the state is based on every institution. But the state, however, does require each college to develop a way to measure student progress and report results.

The Colorado legislature has set up a statewide higher education accountability programme. Under this scheme public colleges and universities are penalized if they do not formally assess the progress of each student.

Value added-testing is also mandatory in South Dakota and several other states. In New Jersey for example, the plan will include a test of critical thinking and writing abilities for each college graduate plus a survey of alumni and employers seeking input about the quality of education college graduates received.

The search for better ways to assess higher education is vital. But there is a great danger that politicians, not educators will direct the process. And there is equal danger that we will end up measuring all things except those that matter most. How can colleges evaluate appreciation of music, dance, and the visual arts? What about honesty and good judgement? And how are we to discover a student's commitment to become socially and civically engaged?

Professor Martin Trow of the University of California Berkeley put the problem in perspective: "There really is no doubt that the experience of higher education has effects on students, both in their attitudes and their behaviour... it is true that most are not adequate measures of things we are really interested in such as growth and refinement of a student's sensibilities, the development of independence of mind, personal integrity and moral autonomy."

The truth is that traditional standards of quality have focused on these aspects that are easiest to count. But these measures do not reveal what colleges and universities actually do. And with all of the talk about quality of higher education they failed to consider carefully the impact on students.

Public support for higher education is now being linked to the tangible idea that the investment should pay off. And colleges are being hard pressed to present evidence of success that validates the process. Growing uncertainty about the value of a college degree calls for more candour on the campus.

Some educators argue that the college experience is an end in itself, not something to be measured. College is not a preparation for life. They say, it is life. However at a time of rising costs and high expectations colleges do not have the luxury of detachment. Something more than blind faith is required. Both integrity and accountability are essential.

# A classic of its kind

## H. MacL. Currie on Walter Pater's 19th-century rediscovery of moral purpose in art

"Art for art's sake": the idea is ultimately traceable to Kant and his school. Works of art, he claimed, had "purposefulness without purpose" (*Zweckmässigkeit ohne Zweck*); their value subsisted in them themselves, without external reference; moral and intellectual considerations were irrelevant in the appreciation of art. In this context, Picasso was later to ask, when questioned about the meaning of one of his paintings, "What does a tree mean?".

Théophile Gautier helped to give the notion wider currency, as in the preface to *Mademoiselle de Maupin* (1835), and A. C. Swinburne (1837–1909) and W. H. Pater (1839–1894) came under his influence. Pater, an Oxford classics don (at Brasenose) produced a collection of charming if not always scholarly essays (on, for example, Leonardo da Vinci, Botticelli, Michelangelo, and Winckelmann), *Studies in the History of the Renaissance* (1873); thus giving a powerful stimulus to the aesthetic movement of the 1880s. For Oscar Wilde it was the "holy writ of beauty". W. S. Gilbert's creation, Reginald Bunthorne, the poet of exquisite sensibility in *Patience*, sends up delightfully the affectation of the Wildeans.

But the Greeks and Romans had not sundered art and morality. Their literature very largely had a moral intent, and their sculpture expressed spiritual as well as physical ideals. Roman literature at its best (in the work of the great Augustans Virgil, Horace and Livy) has peculiarly strong civic awareness.

The major abiding strain in Pater's classicism was the philosophy of Plato,

his lectures on which he published the year before his death, and probably its quality of aspiration and its search for the absolute helped make the ideal of *l'art pour l'art* attractive to him. Furthermore, was there not a campaign to be fought against the prevalent Victorian attitude which looked for edification from art even at the expense of good taste and beauty?

His masterpiece, *Marius the Epicurean* (1885), is a romance depicting the spiritual and philosophical journey of a reflective young Italian nobleman living in the Antonine age ("possibly the only period of history in which the happiness of a great people was the sole object of government" according to Gibbon).

Marius begins as a votary of the ancient and homely Italic religion of farm and countryside, but the death of his talented young friend the sceptical Flavian (the cutting short of early promise is a favourite theme with Pater – see his *Imaginary Portraits*, published in 1887) and of his mother gives him pause, and he turns to Epicureanism with its denial of divine intervention in human affairs. Called to the court of the Stoic emperor Marcus Aurelius in Rome, he is deeply impressed by the great man's character and adopts his creed.

The theologies of Stoicism and Christianity are far apart but their humanitarian ethics are similar. In his mystical and Platonic search for truth and wholeness, Marius feels the attractions of Christianity and is about to become a Christian when he is arrested at a Christian meeting and dies for the faith, virtually a martyr.

In this work Pater maintains that beauty can be the object of the soul's longing in just as pure, devoted and austere a manner as any that asceticism may inspire. He presents not so much a story as a series of poetic meditations on art and religion, both pagan and Christian. A. C. Benson's assertion that the sensuous appeal and liturgical solemnities of religion lie at the heart of the book is surely right.

*Marius* in fact is at another level, I think, Pater's distinctive contribution to a special kind of writing which had been appearing. Bulwer-Lytton's *The Last Days of Pompeii* (1834) and Charles Kingsley's *Hypatia* (1853) were essentially works of Christian apologetic in novel form, showing how the truth of the Gospel had met and triumphed over active opposition in early times. (Marcus Aurelius, good man though he was, persecuted the Christians.)

In his own way Pater is handling the same subject. The best in paganism appeals to the discerning and sensitive mind of Marius, and when he encounters Christianity he sees what he already highly values confirmed and given new authority by a compelling spiritual energy. He experiences a progressive revelation, culminating in the new faith to which he resolves to give allegiance.

Swinburne sadly felt that the "pale Galilean" had conquered. But it is not a collision of forces which Pater describes; for him Christianity is in a sense a summation of much of the best that preceded, a final expression of what high souls in their various ways had yearned for in the past.

The most interesting Latin writer in the Antonine age was Apuleius whose *Golden Ass*, the tale of how Lucius, a sorcerer's apprentice, is accidentally changed into an ass and finally delivered, after many adventures, by the goddess Isis, is the only Latin novel to survive entire.

Marius and Flavian read Apuleius, especially dwelling on the Cupid and Psyche myth embedded in the story. The Euphuism, the gorgeous baroque, of the prose delights them. It is not unlikely, I believe, that Apuleius figures somewhere in the genesis of Pater's highly self-conscious and fastidious style. In particular, the strangely beautiful and moving Latin of the descriptions of the rites of Isis must have said to Pater as both literary artist and man of religious feeling.

Henry James (1843–1916) shares with Pater an interest in character and motivation – the sub-title of *Marius* is "His Sensations and Ideas". Stylistically there is also a similarity, both writing long, complex, yet lucid and well articulated, sentences with frequent parentheses and qualifications.

James became established as an author earlier. Did Pater learn something from this contemporary? His matter in *Marius* is classical, but his procedure is mostly far from being so. He often carries subtlety of analysis to an extreme point. The ancients did not over-elaborate their thought. Wilde's dictum, "nothing succeeds like excess", would not have been received sympathetically.

Intuitive and preoccupied with "civilizations and souls", Pater preached an etherealized hedonism. Edmund Gosse believed that he had abandoned Christianity; rather he had moved away from dogma to embrace with conviction a freer understanding of the faith in which sacrifice and beauty were primary elements. Impressionistic as a critic, he is an intriguing combination of moralist and psychologist. *Marius* offers a full statement of his philosophy while also well exemplifying his literary artistry.

What today would Tennyson make of Allen Ginsburg, Walter Pater, of Salvador Dali or Francis Bacon? The frontiers of art have moved. Jean Dubuffet with his random assemblages of waste materials has in our time sought to vindicate the claims of *art brut* (raw art). Last year the National Gallery of Modern Art in Rome held an exhibition of graffiti from New York.

The post-painterly abstraction of the "minimal art" school favours impressive flat colour-fields and simple geometry, and often "primary structures" are devised to suit particular environments.

How would Pater, fervent lover of the Renaissance treasures of Ravenna, André's 120 Fire-Bricks in the Tate Gallery? But every age is, as C.S. Lewis put it, "only a period". And does not the law of art depend entirely on case law?

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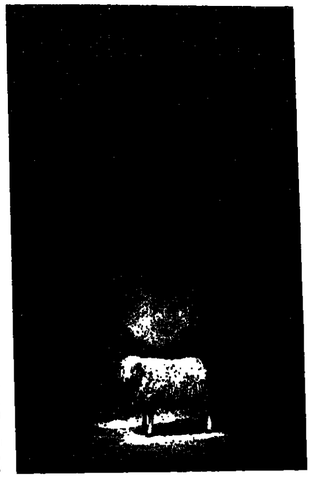

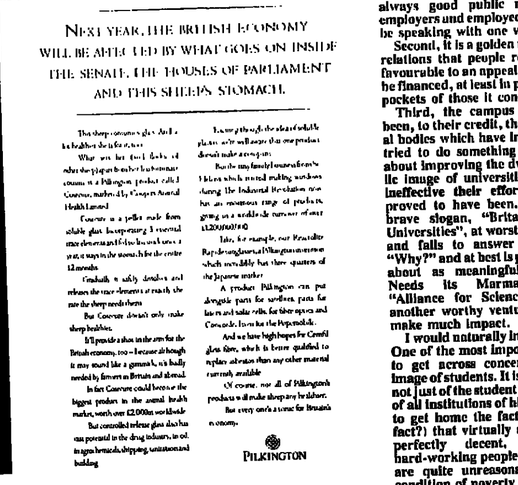


# Making the media, mistaking the message

## Roland Hurst on universities' failure to communicate with the public

In a Stygian gloom, a solitary sheep stands in a pool of light, gazing obligingly at the camera. This simple, memorable picture occupies half of a double-page advertisement for Pilkington. The slick copywriting explains the significance of an image which has no obvious relation to this company or its products. "Next year", runs the headline, "the British economy will be affected by what goes on inside the Senate, the Houses of Parliament and this sheep's stomach."

Pilkington is manufacturing a novel product for animal nutrition. It consists of a pellet made from soluble glass which incorporates three essential trace elements which are slowly released in an animal's stomach. "It could become" – note the deft ambiguity of the copywriting here – "the biggest product in the animal health market, worth over £2,000 million world wide."

Whatever the actual share of this product's share of its market may prove to be, Pilkington has good reason to crow. Here is a major company getting its message across in an imaginative way so three cheers for Pilkington's bright marketing.

Or rather two cheers, certainly as far as universities are concerned. Careful reading of the copy reveals that Pilkington is not claiming the pellet as its "invention", as it does in the case of at least one other product mentioned in the advertisement: "Take for example, our Reactolite Rapide sunglasses, a Pilkington invention, which incredibly has three-quarters of the Japanese market."

It could not in all honesty make such a claim. For this product was conceived, devised and developed at the University of Leeds, and indeed was the result of some enterprising collaborative research between two very different departments. So spare one cheer at least for another innovation from the academic community, for another successful case of technology transfer.

It is unfair to pick on Pilkington. It cannot be difficult to find similar examples of industry taking the credit for hatching golden eggs which have in fact been fertilized and quietly incubated (often over long periods) in university laboratories. The purpose of this advertisement was to promote the company, not to hand out praise to bright academics, however well-deserved such an accolade would be. This example is given because it was reproduced without amendment in the latest issue of the British Association's magazine, *Link-Up*, which is designed to promote technology transfer between higher education and industry.

If some acknowledgement of the university's primary role in devising and developing this product had been given – however casual the reference – would Pilkington's public image have suffered the slightest wrinkle? Is it unworldly to suggest that the company's reputation might have been enhanced if it was seen publicly to be collaborating with university scientists? Is the image of universities such that no commercial organization wishes to be seen in their company? Or is the hard fact of the matter that no enterprising firm is going to divulge the source of its good ideas?

There are many occasions when politicians lavish praise upon the pioneering work of industry which, we are repeatedly reminded, creates the wealth which fuels public expenditure. Shortly before the House of Commons rose for its summer recess, an adjournment debate was held on the UK Space Technology programme, occasioned by the successful launch of the European Space Agency's Giotto mission to intercept Halley's Comet.

Those who spoke heaped well-deserved praise upon British Aerospace for its achievements in this and other ventures. But no mention whatsoever was made of the crucial and substantial contributions made by university space scientists to the success of the Giotto launch.

"Space is a success story", said the Minister concerned, "and the congratulations lie, quite rightly, with the industry itself." He singled out for mention an experiment on the spacecraft designed and developed by an international team led by a professor at Kent. But the context of the reference implied it was to the credit of British Acrospace.

The words "university" or "academic" never appeared in the debate, (nor was the Science and Engineering Research Council mentioned apart from a genuflection towards the Rutherford Appleton Laboratory), but these were passing congratulations to the "European scientists and engineers" involved in the programme.

The MP who initiated the debate declared his interests: he is the parliamentary adviser to the space and communications division of British Aerospace as well as being chairman of the all-party space committee. Does the academic scientific community have comparable advisers? If so, where were they?

Such oversights in a debate which, as the Minister concluded, "has allowed us to give industry the public recognition it richly deserves", were almost certainly unconscious and not unusual.

It is fruitless to bleat about this. Universities, research councils and the like have themselves to blame for the lack of public appreciation of their primary role in much of the wealth-creation of modern industry. It is something they should be seriously worried about. Every time industry bedecks itself with laurels for innovation which should equally garland universities, so it reinforces popular prejudices about unworldly and unproductive higher education.

The means to get their message across in an effective and imaginative way are there if universities can generate the necessary will and resource to grasp the nettle. It is not too difficult to conceive of campaigns which bring home to the public that many products in the marketplace have origins which can be traced back directly to often speculative research in university departments.

The successes of continuous technology transfer over the past 40 years or so could form the basis of what might be one of a series of campaigns which could be mounted. Next year has been designated "Industry Year" by the Royal Society of Arts. The slogan is to be "Thanks to Industry". Will it be a forlorn hope to expect industry, as it basks in such overdue gratitude, to give its own thanks to those in universities who have made their products possible and who have trained the highly qualified personnel they require?

A campaign complementing rather than rivalling that of Industry Year could dispel some well-established myths. No university has the resources to mount one on its own: it needs to be a collaborative venture. If it is felt to be desirable, three questions follow: Who should organize it? How should it be financed? And what should be its character?

For many, the most obvious body to do something positive in this area is the Committee of Vice Chancellors and Principals, but perhaps not to those who dimly remember its previous excursions into such promotional activity, nor to those who remain sceptical that the CVCP has proved itself to be the best body to take initiatives of this kind.

The debilitating constraints of the consensus politics under which it operates, its smooth and cautious style and its general inability to come up with possible and powerful alternatives to government policy (its reaction to the Green Paper was entirely negative – where is the CVCP's alternative strategy for the development of higher education into the 1990s?) may mean it is ill-suited to engineer an enterprise public relations exercise. "The CVCP is the dog that does not bark," as Jocelyn Stevens has observed.

As the CVCP is the nearest we are likely to get to a body resembling an Association of British Universities, we must hope that this dog will not only bark but will learn new tricks as well. And there are signs that it is indeed genuinely interested in doing so.

Last year, it set up an advisory group on public relations which included people from within and outside the university system with interests and experience in the media and in public relations. The *THES* recently carried a report that the CVCP is now proposing to mount a "concerted five-year public relations campaign aimed at improving their image in the outside world" and to ask universities to contribute to the costs of such an exercise.

It may well be that the CVCP has clear ideas about what form such a campaign should take. A sustained, widespread and effective assault on public opinion – and if it is to be mounted at all, it must be done with professional panache – will not be cheap: a budget of seven figures would be realistic.

Whether individual universities will be prepared to stump up the funds required remains to be seen. There will be those who will demur at scarce resources being employed to finance the enterprise. (The danger is that the CVCP will put cart before horse by having a whip round for what it reckons it can expect universities to contribute and will then scratch around to see what it can buy for the money so raised.)

There should be other sources of finance. Such a venture could involve the research councils, learned societies and professional institutions. It most certainly should involve industry, most especially the principal beneficiaries of university research and the major employers of graduates.

The involvement of the campus unions should be encouraged for three reasons. All those working in universities have an interest in ensuring that such campaigns succeed: it is always good public relations for employers and employed to be seen to be speaking with one voice.

Second, it is a golden rule of public relations that people respond more favourable to an appeal if it is seen to be financed, at least in part, from the pockets of those it concerns.

Third, the campus unions have been, to their credit, the only national bodies which have in recent years tried to do something of substance about improving the dwindling public image of universities – however ineffective their efforts may have proved to have been. (The AUT's brave slogan, "Britain Needs its Universities", at worst only prompts and fails to answer the question "Why?" and at best is perceived to be about as meaningful as "Britain Needs its Marmalade"). The "Alliance for Science" campaign, another worthy venture, has yet to make much impact.

I would naturally include the NUS. One of the most important messages to get across concerns the public image of students. It is in the interests not just of the student community but of all institutions of higher education to get home the fact (surely it is a fact?) that virtually all students are perfectly decent, good-natured, hard-working people, most of whom are quite unreasonably kept in a condition of poverty which seriously prevents them buying the books and materials they need to benefit fully from a degree course.

What form should such campaigns take and at whom should they be aimed? The answers will depend on the results of any preliminary market research and on the advice of professionals in public relations whose involvement will be indispensable.

Lessons should be learnt from such campaigns as those mounted by the GLC, or the "Glasgow's Miles Better" campaign. One thing can be taken for granted. Any such campaign must be carried to those who have little or no contact with universities, to the readership of *The Sun* (with a circulation twice that of the quality nationals put together), which, together perhaps with the *Daily Express*, has given universities as bad a press as one is likely to find anywhere in Fleet Street.

We may perhaps see the academic equivalent of Pilkington's sheep appearing in the media. But advertisements are as ephemeral as they are expensive. Beneath and beyond them is the need to project a vivid and realistic image of a university system playing a valuable role in modern society: an image which is a far cry from popular notions of ineffectual dons, indolence in common rooms, intolerance in student unions and inefficiency in ivory towers.

There is much to be said for devising a motif representing UK universities which will become as familiar a seal of quality to every household as, for example, the mark of "pure wool". I would not want to press this analogy too far: a campaign should remove rather than place wool over people's eyes and "woolliness" is a quality intolerated by an academic community.

But it does bring me back to Pilkington's sheep. Such a mark could have appeared, however discreetly, on that advertisement, as it could in hundreds of thousands of other contexts, from the labels on sophisticated medical equipment to guides to archaeological sites.

Finally, a cautionary note. The beneficiary of any successful public relations campaign will be the university system as a whole, not any single university. It requires a self-effacing commitment by all universities, each of which may prefer to blow its trumpet solo rather than in an ensemble.

An inevitable consequence of the cuts is that universities are now bidding against one another for new blood, research grants, for well-qualified students, for vacation business and even for political support.

These undernourished dogs should not eat one another. They must bark loudly together until their political masters realize that they will forfeit Joe Public's vote if universities are not fed properly.

*The author is senior assistant registrar and information officer of the University of Kent at Canterbury.*

British Aerospace . . . 'scientists lack recognition'

## Events

**Oxford University: Department for External Studies. Weekend and Day Schools include: October 19–20 "War and Social Change in Twentieth Century Britain". November 23 "The Media and Mass Communication in British History". January 11 "America and the World since 1941". For details contact the Course Secretary, OUDES, Rewley House, Wellington Square, Oxford OX1 2JA (0865 52901).**

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**National Association for Staff Development in Further and Higher Education will hold a conference on staff appraisal and job review on October 25 at Elm Bank Teachers' Centre, Mile Lane, Coventry. Further information from Ian Strachan, vice principal, Cassio College, Langley Road, Watford. Tel. Watford 40311.**

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**Lord Marshall, chairman of the Central Electricity Generating Board, will deliver the second McKechnie Lecture at the University of Liverpool on November 27. His title will be "The Engineering Challenge of the Electrical Industry", and the lecture will be at 5.30p.m. Tickets can be obtained from the Registrar, University of Liverpool, PO Box 147, Liverpool L69 3BX.**

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**Higher Education International. December 13 to 15 – weekend Conference on the theme of "Greater Opportunities for International Cooperation and Mobility in Higher Education" at the Bonnington Hotel, central London. Details available from HEI, 344/354 Gray's Inn Road, London WC1X 8BP (01-278 4411). Cost: Minimum £95 (non-res); maximum £175 (res).**

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**The thirteenth Annual Conference of the UK Association for Legal and Joint Philosophy will be held at the University of Leeds from April 4–6 1986 on the theme 'Ethical and Legal Aspects of Medicine'. The Austin Lecture will be given by Professor David Raphael on 'Life and Death: Ends and Means'. There will be symposia on 'Male and female sterilisation for eugenic and contraceptive purposes' (Elizabeth Kingdom and Alec Samuels); 'Moral tolerance' (Jennifer Jackson and R D Mackay); 'Warnock and after' (Tony Smith and John Cottingham); 'Resource Allocation' (R G Lee and John Harris). Details can be obtained from Mark Ockelton, Faculty of Law, University of Leeds, Leeds LS2 9JT.**

## Grants

**BELFAST, QUEEN'S:** Dr R. S Ferguson, £125,466 from SERC (interactive process modelling); Mr S. J. Wheeler, £40,000 from SERC (stress-strain behaviour of soils containing gas bubbles), Professor A. E. Long, Mr T. D. Sloan and Mr A. Thompson, £38,425 from SERC (behaviour in service of major box girder bridge); Dr W. Millar, Mr S. Q. A. M. Hossain and Dr I. Boyd, £38,824 from SERC (vector quantization and speech coding for secure low bit rate transmission); Dr S. M. Nelson, £33,070 from SERC (interaction of small molecules with binuclear metallic complexes of binucleating macrocyclic ligands); Professor A. E. Kingston and Dr K. L. Bell, £13,280 from SERC (use of ULCC CRAY-1 for research in atomic and molecular physics); Dr L. Kennedy and Miss E. M. Crawford, £20,430 from ESRC (history of prices and incomes in Ulster 1700–1845); Professor J. F. Fulton, Mr J. Salters and Dr A. McEwan, £24,800 from ESRC (graded objectives in modern languages and their effects on attitudes of pupils and teachers); Professor Emeritus Sir David Bates, £35,600 from United States Air Force Scientific Research Office (ionization processes related to contamination); Department of Ophthalmology, £15,000 from anonymous source (management of capsular membranes secondary to intraocular lens implantation); Professor R. G. Shanks, £10,000 from Lars Labu Etudes et Recherches Scientifiques, Paris (dose ranging study with Alfuzosin in healthy volunteers).

**BRISTOL:** Professor F. G. A. Stone, £80,000 from SERC (structural studies in organic and inorganic chemistry); Dr I. H. Williams, £76,182 from SERC (theoretical modelling of organic reaction mechanisms); Professor P. G. Drazin, £42,370 from SERC (numerical study of the 3D unsteady flow of melt in crystal growth); Mr J. F. Baldwin, Mr G. A. L. Reed and Dr B. W. Pilsworth, £40,550 from SERC/Alvey Directorate (intelligent maintenance system for telecommunication networks); Dr W. T. Griffiths, £37,553 from SERC (characterization of enzymes regulating chlorophyll formation); Professor E. G. Ellison and Dr D. F. Stoten, £35,133 from SERC (teaching consequence with Avon Rubber plc, who contribute the same amount to the project); Dr W. G. C. Boyd, £30,800 from SERC (simultaneous transport of two immiscible fluids); Professor B. T. Pickering, £158,199 from MRC (endocrine neurone as model for study of secretion); Dr W. C. Gibson, £94,654 from MRC (trypanosome genetics and subspecialties); Dr A. M. Roberts, £8,658 from MRC (synaptic pathways from sensory neurones with free nerve endings in frog embryos); Dr N. J. Maitland and Dr C. L. Elson, £14,928 from MRC (molecular biological and immunological studies of human disease); Professor G. Eglinton, £83,000 from NERC (improved mass spectrometric data processing facilities for organic geochemistry and environmental organic chemistry); Dr M. G. Anderson, £14,572 from NERC (spatial variability of hillslope hydrological parameters and problems of optimum model design); Dr P. Cripps, £100,997 from AFRC (specific and non-specific immune factors in the epidemiology of environmental mastitis); Dr B. J. Robinson, £67,890 from ESRC (children's understanding of their knowledge or ignorance of utterance meanings); Dr E. J. Robinson, £11,650 from ESRC (patients' understanding of their doctors'); Professor F. E. Round, £90,137 from Department of the Environment (diatoms and related organisms as indicators for rivers); Dr D. I. Blockley, £50,420 from DoE (risk and cost benefit analysis of limestone mines in West Midlands); Dr D. Birdsall, £17,536 from Ministry of Defence (comparative assessment of different types of rapidly moving spotters at low speeds); Professor R. A. Parker, £10,400 from DHSS (short term information gathering exercise for review of child care law); Professor C. M. Scully, £10,037 from Bristol and Weston Health Authority (lead, calcium and zinc levels in developing human teeth in county of Avon during last three decades); Dr E. C. Barrett, £74,967 from United States Department of Commerce, National Oceanic and Atmospheric Administration (development of training materials for NOAA/Bristol method of satellite-improved rainfall monitoring); Dr M. G. Anderson, $17,280 from United States Army (soil moisture forecasting model with reference to trafficability disease); Dr A. M. Jordan, £10,303 from Overseas Development Administration (evaluation of contact sex pheromone for control of glossina in the field); Professor R. C. R. Williamson, £23,070 from Cancer Research Campaign (adaptive hyperplasia and neoplasia of the intestinal tract); Dr S. Prime, £29,763 from Cancer Research Campaign (cell surface and genetic changes in oral carcinogenesis in vitro); Dr N. Maitland, £14,957 from Cancer Research Campaign (viral aetiology of viral dysplasia and carcinomas); Dr W. J. McC. Mortensen, £14,476 from Cancer Research Campaign (cytokinetic hormonal and metabolic changes during gastric carcinogenesis); Mr N. J. McC. Mortensen, £10,836 from Cancer Research Campaign (endoluminal ultrasonic scanning in pre-operative staging and post-operative follow-up of rectal cancer); Dr J. C. Watkiss, £14,447 from Toeris Chemicals (agonists and antagonists of excitatory amino acids).

**NEWCASTLE UPON TYNE:** Dr J. H. Robinson and Dr J. A. Goodfellow, £33,623 from Medical Research Council (mechanism of antigen presentation to T lymphocytes); Dr A. W. Craft, £69,660 from DHSS (analysis of cancer incidence for young people in small areas); Dr G. T. E. Kealey, Dr C. M. Lee and Professor K. G. M. M. Alberti, £94,719 from Cystic Fibrosis Research Trust (electrophysiological studies on epithelial cell sheets grown from normal and cystic fibrotic exocrine sweat gland and collecting ducts); Professor W. Dunlop, Dr P. Kendall-Taylor, Dr A. P. Murdoch and Dr M. C. White, £17,523 from Birthright (new approach to analysis of pulsatile secretion of luteinising hormone in normal and infertile subjects); Dr D. J. Storey, £394,760 from ESRC (designated research centre); Professor J. B. Goddard, £35,318 from ESRC (occupational change in small business); Professor B. T. Golding, £23,070 from SERC (synthesis of unsaturated lipids); Professor G. B Wetherill, £238,330 from ESRC (statistical analysis of results from complex surveys); Dr J. L. Simmons, £50,842 from Beecham (connective, function and structures of ocellar neurones in the locust); Professor R. V. Thompson, £77,125 from Cosworth Engineering Ltd (turbocharger development); Dr J. S. Burdess, Dr C. J. S. Petrie and Mr A. V. Metcalfe, £20,040 from SERC (active hydrodynamic and squeeze film bearings for control of flexible rotors); Dr A. G. Douglas, £10,542 from NERC (hydrocarbon producing potential of organic matter in Kimmeridge Clay source); Professor A. G. Sykes, £35,967 from SERC (electron transfer in biological systems); Dr H. Marsh, £15,000 from Verkaufsgellschaft für Terpentinprodukte (uft) mgH (catalysis of carbonylation of sodium); Dr J. V. Dobson, £10,625 from Sleger Ltd (agreement on electrochemical studies of superconductor S. Shuster, £31,582 from Roche Products (retinoid inhibition of cytochrome p-448); Dr M. Goodfellow and Dr E. Williams, £25,000 from Pfizer Ltd (development of selection techniques for isolation of actinomycetes producing novel pharmaceutical compounds); Dr J. R. Custers, £9,250 ECU from European Coal and Steel Community (exercise limitation in occupational lung disease); Dr G. L. Toms, £21,302 from Wellcome Foundation Ltd (respiratory syncytial virus immunoassay); Professor R. M. Hanson, £12,975 from Calouste Gulbenkian Foundation, Sir James Knott Trust, Friends of the University library (Gertude Bell project); Dr S. J. Yeaman, £34,911 from MRC (regulation of branched chain 2-oxo acid dehydrogenase complex); Professor R. H. Pain, £39,479 from SERC (nature and relevance of the molten globule state to protein); Dr D. P. Thompson, £61,052 glass ceramics for radome applications); Dr R. Thomas, £19,200 from Coopers Animal Health Ltd (control of parasitism in cattle with a pulse release antihelmintic); Professor K. G. M. M. Alberti, £59,787 from Novo Research Institute (clinical comparison of lente and isophane insulins); Dr M. Kelso, £53,111 from Medical Research Council (pathogenic mechanisms of Group A streptocci); Professor A. R. Archibald, Dr. I. C. Hancock, Dr. C. R. Harwood, Dr A. C. Ward and Dr. E. Williams, £33,145 from Tyne and Wear County Council (promotion and development of Tyne and Wear CC fermentation unit); Dr E. Williams and Dr. M. Goodfellow, £66,000 from Tyne and Wear County Council (new approaches for isolation of novel biological material of commercial interest for production of new antibiotics, pharmaceuticals and industrial enzymes); Dr M. Jarvis, £54,560 from SERC (self consistent calculations of electronic structure and heterojunction quantum wells and superlattices); Professor P. E. O'Connell, £330,000 from NERC (water resources system research unit); Dr M. G. H. Bell, £39,710 from SERC (automatic incident detection for signal controlled urban road networks); Professor M. B. Percival and Dr G. K. Anderson, £46,456 from SERC (anaerobic/aerobic rotating biological contractor treatment of strong wastes); Dr J. W. Ball, £30,000 from SERC (structural design of small element paving slabs used for highway maintenance); Professor F. J. Hill, £19,310 from SERC (analysis of impact of noise from urban railways); Dr B. G. Clarke, £76,380 from SERC (in situ measurement of properties of weak rock using self boring pressure meter); Professor R. N. Perkins and Dr J. Congleton, £22,041 from SERC (slow strain rate tests on reactor materials in high temperature water).

**ST GEORGE'S HOSPITAL MEDICAL SCHOOL, LONDON** Dr T. J. C. Jacob, £68,786 from MRC (cataclogenic mechanisms); Professor T. J. E. Pilkington, £60,399 from MRC (prevention of diabetes); Dr A. P. Johnstone, £59,697 from Wellcome Trust (inhibitors of immune system); Dr B. H. Anderton, £25,100 from undisclosed source (neurofibrillary pathology in Alzheimer's Disease); Mr J. R. Pepper, Professor L. Hudson and Dr A. Kirby, £21,685 from undisclosed source (lung transplantation); Professor J. G. Widdicombe, £13,500 from Karl Thomae GmBH (extended examination of the Thomae substance in healthy and infected trachea).

# NOTICE BOARD

**A sculpture made by members of the public, in this case a family from Nottingham, during a recent public sculpture workshop "Figures in the Park" at the Yorkshire Sculpture Park at Bretton Hall College. The workshop, which has become an annual event, was directed by sculpture park staff and was again very popular and successful.**

## Chairs

**Dr William Hume, currently senior lecturer in oral pathology at the University of Manchester, has been appointed to the chair of dental surgery at the University of Leeds.**

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**Dr A. T. Johns has been appointed to the chair of electrical and electronic engineering at the City University.**

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**Dr P. G. Daniels has been appointed to a personal chair in the department of mathematics at the City University.**

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**Mr W. M. Hattersley has been appointed professor and head of the Centre for Property Valuation and Management at the City University.**

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**Dr R. C. Lock has been appointed visiting professor in aeronautics and Professor X. J. Luo visiting professor in chemistry at the City University.**


THE BRITISH PSYCHOLOGICAL SOCIETY

**Psychology Project Award for Schools and Colleges**

Entries are invited from Schools and Colleges for the Psychology Project Award sponsored by The British Psychological Society. Working alone or in small groups students are encouraged to carry out 'empirical projects of a behavioural nature' having first received help from a 'local adviser' in a nearby university or polytechnic.

The Project may be part of a General Studies, Science or other programme of study, including 'A' level Psychology. The prize for the best entry will consist of book tokens to the value of £100, for both the students and the school or college plus a certificate.

A free booklet giving full details of the award, advice on how the project should be carried out and the names of local advisers is available from:

The British Psychological Society
St Andrews House
48 Princess Road East
LEICESTER LE1 7DR.

Please send me the booklet on the Psychology Project Award:

Name .....

School/College .....

Address .....

(442)


## Open University viewing

### Saturday September 28

BBC1
8.00 The Handicapped Person in the Community. A feisty group of people. (P251; prog 11)

BBC2
10.35* Science foundation course. Particle physics: hadrons, quarks and charm. (S101; prog 31)
11.00 Arts foundation course. Science fiction. (A101; prog 33)
11.35 The Earth's Physical Resources. Minerals: finds for the future. (S238; prog 16)
11.50 The Earth: Structure, Composition & Evolution. Colliding continents. (S237; prog 16)
12.15 Introduction to Calculus. Differentiating vector fields. (M333; prog 17)
12.40 Complex Analysis. Revision. (M332; prog 11)
13.05* The Changing Countryside. Face of the land. (PD770; prog 2)
13.30 Introductory Electronics. Revision. (T283; prog 11)
13.55 State and Society. Popular planning. (D209; prog 12)
14.20* Modern Art and Modernism. Beaubourg. (A315; prog 31)
14.45 The 19th Century Novel and its Legacy. The novel and television: 2. (A313; prog 16)

RADIO 3 (VHF)
6.35 Maths foundation course. Foundation maths 16. (M101; prog 16)

### Sunday September 29

BBC1
7.35 Materials Processing. New tyres from old? (T392; prog 16)
8.00 Genetics. Genetic engineering. (S299; prog 16)

BBC2
8.40 Maths foundation course. A non-Euclidean universe. (M101; prog 28)
10.10 Ethnic Minorities and Community Relations. The Pritchard Land: a postscript. (E354; prog 11)
11.00 History of Mathematics. An evolutionary model. (AM289; prog 11)
11.25* Art in Italy, 1480–1580. Santa Maria del Popolo – a renaissance church. (A352; prog 1)
11.50 Mathematical Models and Methods. Waves – partial differential equations. (MST284; prog 32)
12.15 Purpose and Planning in the Curriculum. Talking turtle (50 minutes). (E204; prog 10)
6.55 State and Society. Title to be announced. (D209; prog 8)

RADIO 4 (VHF)
7.00 Art and Environment. Big mind – little mind. (TAD292; prog 5)

### Monday September 30

No Television Broadcasts

RADIO 3 (VHF)
6.35 Popular Culture. Course review. (U203; prog 10)

RADIO 4 (VHF)
23.30 Arts foundation course. Life in a railway factory. (A101; prog 33)
23.50 The Enlightenment. Servants, masters and the Enlightenment. (A204; prog 33)

### Tuesday October 1

BBC2
23.50* Biology, Brain & Behaviour. States of mind: levels of intervention. (SD265; prog 10)
23.55* Third World Studies. Brazil – facing the eighties. (U204; prog 16)

No radio broadcasts

### Wednesday October 2

BBC2
6.55* Arts foundation course. Science fiction. (A101; prog 32)
23.30* Introductory Electronics. Revision. (T283; prog 11)

RADIO 3 (VHF)
6.35 Art in Italy 1480–1580. Preparing for exams. (A352; prog 11)

RADIO 4 (VHF)
23.20 Contemporary Issues in Education. Education Bulletin, 8. (E200; prog 23)

### Thursday October 3

BBC2
6.30* Maths foundation course. A non-Euclidean universe. (M101; prog 28)
6.55 Science foundation course. Energy: closing the gap. (S101; prog 32)
23.20* Matter in the Universe. Gravity and the sun. (S256; prog 1)

* repeated programmes



# BOOKS

## Stalin's drive against the enemy within

by R. W. Davies

**Origins of the Great Purges: the Soviet Communist Party reconsidered 1933–1938**
**by J. Arch Getty**
Cambridge University Press, £25.00
ISBN 0 521 25921 5

During the Great Purge of 1936–38, in an atmosphere of mounting hysteria, large numbers of prominent Soviet citizens were branded as traitors. Many were executed or died in captivity, including several of Stalin's supporters in the Politburo, most members of the Central Committee, and most regional party secretaries. The Bolshevik revolution devoured its own parents and children. An enormous literature has been devoted to these events in the West, mainly based on reminiscences by those who survived. Most historians – whether Marxists like Roy Medvedev, or critics of Marxism like Robert Conquest – present Stalin as the evil genius of the tragedy. Even E. H. Carr, frequently accused of underplaying the role of personality in history, surprised his critics and some of his admirers by his assertions that "Stalin had no moral authority whatever" and that Lenin in contrast to Stalin would have been able to "minimize and mitigate the element of coercion".

Dr Getty is sceptical about the validity of previous studies of the Great Purge. In this lively and original essay he argues that they are based at crucial points "almost solely on an uncritical acceptance of rumours from persons not in a position to know". Thus A. Orlov's account, central to Conquest's reconstruction of events, is largely "corridor gossip". The famous *Letter of an Old Bolshevik* was not written by any old Bolshevik but put together by Boris Nicolaevsky, editor of the emigré Menshevik journal, after a conversation with Bukharin in Paris. Nicolaevsky's pen was creative, and the *Letter* includes passages about the political trial of August 1936, which though the conversation with Bukharin took place in the previous spring. Dr Getty rejects the *Letter* as a "spurious source", representing nothing more than Nicolaevsky's "collection of contradictory and unattributed rumours floating around Europe in the 1930s".

Emigré materials and memoirs are undoubtedly tricky, and often unreliable, but Dr Getty underestimates their value. When Khrushchev permitted selective excerpts from the party archives to be published between 1956 and 1964, some of the most extravagant rumours published in the emigré Trotskyist and Menshevik journals of the 1930s proved to be surprisingly accurate. And the stories told to Roy Medvedev by persecuted party members were as a rule far more reliable than Dr Getty implies. But he is right to complain that western students of the Great Purge have paid too much attention to memoirs and have neglected such important sources as the Soviet daily press, official documents and above all the Smolensk archives. In his admiration for primary sources he is insufficiently critical of the Soviet daily press; while it is a "primary source" it is of course a very heavily censored one. But the Smolensk archives, stolen by the Nazis from the headquarters of the regional party committee during the German invasion, and transferred to the United States after the war, are a magnificent source and the only party archive to which western scholars have access. With the aid of those little-used materials Dr Getty has greatly enhanced our understanding of the structural and functional struggles within the party apparatus both before and during those years.

He correctly reminds us that the Russians reserve the term "purge" (*chistka*, more accurately "cleansing") for the regular process of expelling dissidents or corrupt party members, which was an important feature of Soviet party life between 1921 and 1936. What we in the West describe as the "Great Purge" has never been referred to in Soviet documents as a *chistka*. In Stalin's day the official history of the Communist Party designated it firmly if not concisely as the "Liquidation of the Remnants of the Bukharin-Trotsky Gang of Spies, Wreckers and Traitors to the Country". In everyday conversation in the Soviet Union it was usually known as the *Ezhovshchina*. For Dr Getty this is by no means a purely verbal distinction. He rejects the prevalent western view that the "purges" in the Russian sense moved in a continuous crescendo to the Great Purge of 1936–38. Instead he claims that the purges of 1933–35 were milder than their predecessors of the 1920s, and that the elimination of dissidents was not one of their major functions. He even describes one phase of the process as the "benign exchange of party documents".

Dr Getty has got this wrong. Certainly the road to the Great Purge twisted and turned. This is clear evidence of conflict within the Politburo, or of Stalin's indecision, or of both. But the purge of 1933, and the mass expulsions in the North Caucasus which preceded it, were not routine affairs. Launched at a time of extreme crisis in the regime's relationship with the peasantry, they were in large part directed towards the elimination from the party of those who resisted the brutal crushing of recalcitrant peasants after the 1932 harvest. If we follow the advice of Dr Getty and read the daily press reports of purge meetings, we find an account of a drive intended, particularly in its early stages, to remove fainthearts, doubters and dissidents (surprisingly Dr Getty neglects these reports, which were summarized by the emigré Menshevik journal back in 1933). Well over one third of those expelled clearly came into the political categories of expulsion: the 1933 purge was an important step along the road to an obedient party. Dr Getty also treats the 1935 "check up" on party members as "non-ideological". But the data he provides from the Smolensk archives seem to me to show clearly that it further reinforced the drive against dissidents and "class-alien elements".

**"Ezhov's Steel Glove", a 1937 caricature by Boris Efimov of Nikolai Ezhov, head of the political police.**

Dr Getty rightly claims that the conflicts within the party machine which he has studied are an important strand in the development of the Great Purge. In striking contrast to the older American view that the party was a finely-tuned mechanism in which every unit jumped to carry out the orders of the Kremlin, he demonstrates the large element of chaos in party affairs. Zhdanov's party-revival campaign and Ezhov's hunt for hidden enemies, both directed against the local party secretaries, provided the impetus to a "chaotic 'populist terror' which swept the party in 1937–38". He does not argue that this is a sufficient explanation of the Great Purge. Other factors, including the tensions between Soviet and "bourgeois" specialists, and between old and new Bolsheviks, were also important. But he locates these issues to be studied by others.

In the meantime, he provisionally concludes that in the years leading up to the Great Purge "a chaotic local bureaucracy, a quasi-feudal network of politicians accustomed to arresting people, and a set of perhaps insoluble political and social problems created an atmosphere conducive to violence". If I am right about the purges of 1933–35, he should also have added that, by fits and starts, politicians became increasingly accustomed in these years to seeking out and denouncing heresy and treachery among their fellow Communists.

In the context of this "atmosphere conducive to violence" Dr Getty is prepared to concede that Stalin's personality may have been of some significance. He believes, however, that Stalin's role in the Great Purge was confined to "catalytic and probably ad hoc interventions at three pivotal points". As these pivotal points were the crucial decisions to reopen the investigation of Kirov's murder, to "unleash Ezhov" and to condemn Pyatakov, this seems to put Stalin back in the centre of the stage. Dr Getty rather uneasily comments that "Actually, the question of Stalin's role as planner was – or should have been – a secondary one in this analysis."

Dr Getty's difficulties about Stalin partly stem from his inadequate appreciation of the depths of the Soviet economic crisis of 1932–33, and of Stalin's role in its solution. Dr Getty's Stalin was a supporter of "moderate policies" towards the economy from 1931 onwards. But the imposition of the death penalty for stealing collective-farm grain in August 1932, the deportation of whole villages at the end of the year, and the widespread famine of the spring of 1933 are facts and not rumours, and we know something of Stalin's role in these events. They are not mentioned by Dr Getty. But they played an important part in the lack of esteem for Stalin among some senior party members, and in reinforcing both Stalin's strong conviction that he was entirely in the right and his sickly suspicion of hidden enemies.

Some important factors are missing from Dr Getty's summary of the present state of our knowledge about the Great Purge. He has little to say about the pervasive ideology of the "enemy within", which became increasingly strident in the course of the 1930s, or about the growing international tension which followed the victory of the Nazis in Germany, and whipped up the search for potential saboteurs. His agenda for future historians of the Great Purge should also have included the political heritage from tsarism. Until 1936, Stalin as supreme political leader was working under the restraints of his colleagues, liable to be criticized in the Politburo and perhaps occasionally outvoted against. After 1937, he still took advice from all and sundry, but he could ignore it. He had raised himself roughly to the position occupied by Alexander III or Nicholas I in relation to their advisers. But he lacked their unchallenged, God-given authority, and maintained his status by acquiring some of the characteristics of Ivan Grozny, and by committing and encouraging witch-hunts worthy of the Inquisition. Perhaps it was Khrushchev, or even Andropov, who finally overthrew the tsarist political system?

Historians may ruin their eyesight by poring over microfilms of the Soviet daily press, the Smolensk archives and Dr Getty's other "primary sources". But such questions will not emerge, and somehow they need to be investigated.

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## National survival

**Social Change and National Consciousness in Twentieth-Century Ukraine**
**by Bohdan Krawchenko**
Macmillan, £30.00
ISBN 0 333 36199 7

The founders of the Soviet state were confident that socialist modernization would gradually eliminate national differences within the former Russian Empire and bring into being a new historical community of the "Soviet people". In fact the social and economic development of the USSR after 1917 tended to enhance rather than diminish national sentiment among the non-Russian peoples. In this broad and challenging book, Bohdan Krawchenko seeks to show how and why this came about in the Ukraine, the second largest of the 15 republics of the USSR.

He argues that on the eve of the 1917 Revolution the Ukraine was not a nation: those who spoke Ukrainian were illiterate peasants without any national consciousness; the indigenous intelligentsia was small in numbers and lacking in social weight; the towns, which were the chief centres of cultural life, were entirely under Russian influence. While Krawchenko perhaps underestimates the significance of the Ukrainian cultural movement, which dated back to the 1820s, and the nationalist parties, his argument is persuasive, if rather scrappily presented.

The Revolution was to change the face of the Ukraine. The civil war of 1918–21 broke down the localism of the peasantry (though the writer bare-ly alludes to this critical period), and in the wake of the establishment of the Ukrainian Socialist Soviet Republic in 1920 there was an efflorescence of national consciousness. Krawchenko explains this largely in socioeconomic terms – as a product of the migration of Ukrainians to the towns, the growth of literacy, and the renewed vitality of the rural intelligentsia, with whom the Communist party of the Ukraine (CPU) was compelled to compromise. He is loath to acknowledge the contribution made by the CPU itself, which consciously fostered a national culture by promoting the Ukrainian language in education, the written media, in government, party and trade-union business. The policies of "Ukrainianization" were brought to a swift halt, however, in 1929 when the Stalin government hit out at "national deviationism".

In the course of the next decade-and-a-half the Ukrainians perhaps suffered more than any other Soviet nation. Up to six million died as a result of collectivization, the famine of 1932–33 and the purges. The regime's obsessive determination to extirpate Ukrainian culture extended even to the execution of several hundred blind *bandurysty*, or itinerant folk-singers. After 1941 a further six million people lost their lives when the Ukraine fell under German occupation. Erich Koch, who headed the *Reichskomissariat Ukraine*, described his job as being "to suck from Ukraine all the goods we can get hold of, without consideration for the feelings or the property of Ukrainians". Yet in spite of Stalin's elimination of the Ukrainian cultural and political elite and the barrowing depredations of the Nazis, Krawchenko argues that "major aspects of Ukrainian national life survived", largely as a consequence of continued urbanization, industrialization and the expansion of education.

After Stalin's death a new political elite emerged in the Ukraine, committed to a degree of autonomy within the federal system. In the early sixties this elite fought hard against attempts by Moscow to downgrade the status of Ukrainian within education, the media and public life. The vigour of the elite's response combined with the ongoing processes of modernization to create a situation in which "Ukrainian national identity is stronger than ever in the past". The real problem with Krawchenko's book is that he never really explores the dimensions of this "national identity" – for example, whether it is a feature of some social groups rather than others, or whether it is interwoven with a contradictory sense of belonging to the Soviet state. Moreover he too readily assumes that "national identity" issues in nationalist opposition to Moscow, in part because he is wedded to the notion that Moscow is unequivocally bent on "Russification". Nevertheless if not all the arguments are plausible, Krawchenko has succeeded in shifting debate about nationalism in the USSR away from the political relationship between the centre and periphery towards an analysis of the social processes of nation-building and the ways in which these have fostered national consciousness. It remains to be seen whether these processes will ineluctably engender "continued growth in national tensions", or whether palliative measures by the regime can forestall the latter.

**S. A. Smith**

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# BOOKS

## Fables in sequence

**Dryden: the poetics of translation**
**by Judith Sloman**
**prepared for publication by Anne McWhir**
University of Toronto Press, £22.00
ISBN 0 8020 5642 3

There have always been faithful admirers of Dryden's translations, those works to which he increasingly devoted his mature powers; Pope remarked that "his fire, like the Sun's, shin'd clearest towards its setting". This view has been slow to make headway in survey courses, but the case for regarding Dryden's translations as central to his achievement rather than marginal has been made more frequently in recent years. Professor Sloman died in 1980, and some of the pioneering rhetoric of this posthumous book already feels dated; nevertheless, her thesis is original, and her *obiter dicta* stimulating.

Professor Sloman's interest lies in what she calls the "collective translations", Dryden's selections from various classical and medieval authors which he published in several anthologies, of which the most important are *Sylvae* (1685), with its versions of Virgil, Lucretius, Horace and Theocritus, and Dryden's final collection, *Fables Ancient and Modern* (1700) which brings together tales from Chaucer, Ovid, Boccaccio and Homer. But these are not anthologies, argues Professor Sloman; rather, they are "coherent poems where the reader begins at the beginning and moves continuously through the whole". Hence particular juxtapositions, sequences, and, indeed, omissions, should be read as having important and often ironic implications. "Dryden subordinates Homer in *Fables* by translating just one book of the *Iliad*, less than from any other original, placing it next to 'The Cock and the Fox' from Chaucer, and including Chaucer's complete, three-part epic, 'Palamon and Arcite'." In view of the praise which Dryden devotes to Homer (at the expense of Virgil) in his preface to *Fables*, and his expressed intention to translate the remainder of Homer, it is difficult to see the point of this subordination of Homer which the structure of the volume is supposed to achieve. Too much is surely being claimed for the significant structure of these collections, particularly since their publisher, Tonson, may have had some influence on the selection and arrangement.

But if this part of Professor Sloman's thesis is pushed too far, she is surely right to see that the form of collective translation has philosophical implications: "collective poems imply an exploratory and sceptical view of life in which the poet creates his own order out of the materials available to him", and Dryden's selections "demonstrate the mutual relativity of a number of different beliefs and views about human life". Besides, these narratives are fractured: many of the stories are fragments, and other stories are just poignantly alluded to.

Whether we choose to regard Dryden's translations as anthologies or as integrated poems, it is clear that there are thematic links between the pieces which he selects. He uses translation to explore the philosophies of the ancient world (notably those of Epicurus and Pythagoras), and also to comment on the politics of his own day. His sly asides about the revolution of 1688 are well known, but Professor Sloman argues that these are not simply Jacobite remarks; rather, they are part of a sustained exploration of political and military power, in which one of the characteristics of the would-be hero or ruler comes to be identified as sheer stupidity.

As one expects in a posthumous book, there are several lines of argument which need to be extended, such as the suggestion that Dryden reshapes the end of the *Aeneid* was to make the morality of Aeneas's victory more problematic, or the remarks on connections between Ovidian metamorphosis and Christian miracle. But incomplete arguments can still be valuably stimulating; more troubling are the omissions necessitated by Professor Sloman's thesis about significant form in the collective translations. There is no room for Dryden's versions of Juvenal and Persius, and little space for his Virgil. Moreover, many of the poems which are discussed lose their individuality as the details of their particular tone and their relationship to the original are made subordinate to their place in these larger structural patterns. Nevertheless, Professor Sloman's book is a stimulating re-reading of Dryden's translations, and Anne McWhir is to be thanked for the care which she has devoted to its publication.

**Paul Hammond**

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## Given his due

**Philip Massinger: a critical reassessment**
**edited by Douglas Howard**
Cambridge University Press, £22.50
ISBN 0 521 25895 2

The plays of Philip Massinger have rarely, over the centuries, enjoyed a good press. Douglas Howard, in his introduction to the present volume, sets this down in part to Massinger's self-deprecation, to the lack of a bold profile that results from so much of the work being collaborative, and to the greater esteem shown, then and now, to writers such as Fletcher, with whom he closely associated. Yet Massinger succeeded in becoming principal dramatist to the King's Men, was involved in the writing of as many as 55 plays in a wide variety of genres, and left 15 unaided pieces over an extended theatrical career.

The greatest stimulus to modern reassessment of Massinger has undoubtedly been the remarkable scholarly edition of his works which Philip Edwards and Colin Gibson edited for the Oxford University Press, and which appeared in five volumes in 1976. There has been a need, however, for a companion group of critical studies which would give Massinger his due, and go some way to establishing the level and the nature of his contribution to Jacobean and Caroline theatre. This necessary task the present collection undertakes, for the most part admirably.

Prominent among the pieces which set Massinger in a persuasive literary and historical context stands the excellent essay by Martin Butler. Butler reads *The Roman Actor* as one of a sub-genre of plays dealing with the politics of 1st-century Rome, a genre that stretches back to, and is much influenced by, Jonson's *Sejanus*. *The Roman Actor* emerges from Butler's consideration as a strikingly pungent tract for the times, a study of absolutism that engages at many points with current fears about the Stuart tendency towards autocratic rule. Massinger suffered several brushes with the censor, and if Butler's analysis is right, it is not hard to see why the censor felt he must act. Even more striking is Butler's view of this as "the most anti-theatrical play of the English Renaissance", one that stresses the ineffectiveness of theatre as moral agent, and draws attention to the dangers inherent in theatre's glamourizing of evil, a criticism that sets the play alongside radical political pamphlets of the time. If nothing else, Butler's essay will secure further and perhaps controversial attention for a play Massinger himself valued, and which Anne Barton, elsewhere in this volume, calls "a brilliant tragedy".

Both Philip Edwards and Colin Gibson contribute to this volume, in the role of critics rather than editors. Both emphasize Massinger's skill in diversifying his theatrical language, in contrast to received opinion about the uniformity of his style. Edwards goes on, in an entertaining essay, to show the lifelikeness of Massinger's depiction of sexual relationships, such as those of Sforza and Marcella in *The Duke of Milan*, and Leosthenes and Cleora in *The Bondman*. A vividly etched portrait is that of Mathias, the supreme male self-approver in *The Picture*; indeed in Edwards's hands the plays become almost feminist in their gleeful exposure of self-satisfied males. A less ebullient side of Massinger emerges from Russ McDonald's fine discussion of *The Maid of Honour*, a play he dates early in Massinger's career, and one which shows plainly the influence of Shakespeare, Jonson and Fletcher. But derivativeness need not imply a want of artistic seriousness, and McDonald convincingly shows, for example, the moral intent that informs the suprise ending of a play which he successfully recruits to the ranks of the dark comedies.

Several writers connect Massinger with current social assumptions and anxieties. Nancy Leonard takes on the difficult problem of an audience's balance of sympathies in *A New Way to Pay Old Debts*, and interprets that uneasy equilibrium as "an emphatically current representation of the insecurities and tensions of the close of James's reign". Michael Neill demonstrates the scriptural framework of *The City Madam*, showing how biblical views of charity cast an unflattering light on contemporary greed and social ambition. Douglas Howard traces the tendency towards political controversy in Massinger's plays after 1625, and notices the several conflicts with the licensing authorities. *Believe as You List*, he convincingly argues, deliberately sets orthodox morality, in the legitimacy and goodness of Antiochus, over against the interest of the state in stability and political order – an issue of evident topicality. Each of these essays renews one's sense of the engaged quality of Massinger's playwriting.

Two essays of differing character complete the volume. Cyrus Hoy, who has made so very substantial a contribution to disentangling Massinger's work from that of others through a series of essays in *Studies in Bibliography*, here assesses the conditions under which Massinger successfully collaborates with his fellow writers. When Massinger is assigned the play's beginning and end, and one plot-strand in between, an artistic success usually results; where two or more playwrights share a plot (with the exception of *The Custom of the Country*) the outcome is usually disastrous. The book's last essay is Anne Barton's "The Distinctive Voice of Massinger", reprinted from her *TLS* review of the Edwards and Gibson edition. Professor Barton's judgement, pithily expressed as ever, confirms the impression that emerges from the volume as a whole: that in Massinger we have a dramatist of considerable stature, ripe for reassessment in the theatre as in the study, a creator of men and women who are "living and real", and a moral and political thinker who spurned simple solutions in favour of a complex engagement with contemporary problems.

**J. R. Mulryne**

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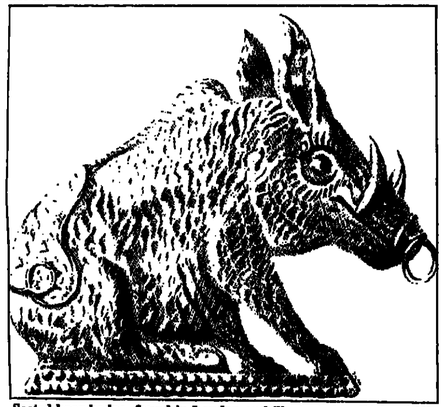

**Seated boar badge, found in London and illustrated in** Richard III: the road to Bosworth Field **by P. W. Hammond and Anne F. Sutton (Constable, £12.95).**

## Roulette wheel

**The Manipulation of Literature: studies in literary translation**
**edited by Theo Hermans**
Croom Helm, £17.95
ISBN 0 7099 1276 5

Big literatures (and there is none bigger than English) are not only more resistant to importing other literatures than small ones, but far more reluctant to recognize the role that translations none the less play within their culture. Thus the status of translations, and of translators and translation studies, is inversely proportional to a culture's perception of its own size as measured either against other contemporary cultures (as now) or against its historical antecedents. Translation studies flourish in countries like Belgium, or Czechoslovakia, or Israel, where the importation of literature "from outside" appears to be the principal means of avoiding provincialism; on the other hand, in Britain, where the English language gives access to a truly worldwide readership, translations hardly figure as a subject of serious literary study at all.

Until recently, the prestige of linguistics as a model for literary study also acted as a barrier to translation studies – since it focused attention on the theoretical red herring of the untranslateability of any utterance from one language into another. However, Susan Bassnett's *Translation Studies* (1980) brought to a wide public the notion that the cultural dynamics of translation were more important than its theoretical impropriety, and Theo Hermans's new collection of essays now offers more specialized studies of particular topics in this rich and expanding field.

All the contributors to this volume (of whom six work in Belgium and the Netherlands, the other six in Britain, USA and Israel) adopt more or less the "polysystem" theory of literature, which has the inestimable advantage of ressembling applied common sense. They are resolutely unconcerned with how decisions are made as to what is moved from a "source" to a "target" culture, and it seems to me therefore that the title of this volume is ill-chosen. Though anyone interested in the general functioning of literary systems will learn much from Theo Hermans and his international team, the reader will learn little more about the *manipulation* of literature than what Schücking, Escarpit and Hall pointed out long ago, and which leaves plenty of room for the roulotte wheel.

**David Bellos**

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## Reliable sources

**The Swan at the Well: Shakespeare reading Chaucer**
**by E. Talbot Donaldson**
Yale University Press, £15.00
ISBN 0 300 03349 4

Surprisingly it is only in quite recent years that it has been generally accepted among critics that Shakespeare did indeed read Chaucer. Even more surprisingly, the relationship between these two giants of our literature has never really been explored by a properly competent scholar, although a number of limited and partial studies have of course been published. Nevertheless, as Talbot Donaldson says in his introduction, "most critics concerned with comparisons have been primarily Shakespeareans and only incidentally Chaucerians", and this has resulted in inadequate treatments of the subject.

We Shakespeareans are accustomed to being rather patronizing about Shakespeare's sources: we assume so readily that Shakespeare is an alchemist, turning dross into gold, that we find it difficult to cope with situations in which the "raw material" is gold already. (Significantly, there is yet no definitive study of Shakespeare's reading of Ovid, either.) We are good at making hit-and-run raids, proving a relationship through the use of verbal parallels, but we rarely find ourselves obliged to take the source seriously to consider it as a fully accomplished work in its own right. When it comes to Chaucer we start from woefully simplistic readings of the poems, untouched by any acquaintance with modern Chaucerian scholarship or criticism; it is high time that a Chaucerian of the calibre of Talbot Donaldson arose to demonstrate, courteously but firmly, where we have gone wrong.

The meat of this book is inevitably in its discussion of the fortunes of Troilus and Criseyde/Cressida. Two out of six chapters deal exclusively with this material and Chaucer's poem, which was after all the most celebrated love poem in English until Shakespeare replaced it with *Romeo and Juliet*, crops up everywhere. In a chapter called "Criseyde Becoming Cressida" Donaldson provides a subtle corrective of both the sentimental reading of Chaucer's Criseyde and the moralistic reading of Shakespeare's Cressida: the two characters turn out to have much more in common than has previously been allowed. Donaldson explodes the myth that Shakespeare degraded and coarsened Chaucer's charming heroine, insisting on the important distinction between the narrator of *Troilus and Criseyde*, who is shamelessly in love with his heroine, and Chaucer the poet who is perhaps as cruel to her as Shakespeare is. Both heroines remain unforgivable in terms of their actions but both make serious claims on our sympathy.

Perhaps because he is a Chaucerian rather than a Shakespearean, Donaldson finds *Troilus and Cressida* a much more congenial work than *The Two Noble Kinsmen* which he calls "that most distressing of plays". Even so he writes perceptively of the ugliness and pessimism of Shakespeare's vision and finds its roots in a particularly gloomy reading of *The Knight's Tale*. Still a champion of Shakespeare's heroines (and a critic of the sententious but shallow Theseus), he places Emilia firmly at the centre of the play and her "living despair" at the centre of its disturbing message.

Modern Shakespeareans, for whom Chaucer is apparently primarily a comic poet, may be taken aback at the emphasis on his serious side here; Donaldson argues convincingly that Shakespeare had a deep appreciation of Chaucer as a powerful tragic poet. On the lighter side, however, he makes a spirited comparison between the parodic and burlesque elements in *The Tale of Sir Thopas* and those in the "Pyramus and Thisbe" episode in *A Midsummer Night's Dream*, and he offers an original discussion of the parallels between the Wife of Bath and Falstaff.

In all, this book is an important corrective to the misreadings of Chaucer that have prevailed among Shakespearean critics and provides definitive proof (if it is still needed) that Shakespeare did indeed read Chaucer. Reading in the acknowledgements that the appearance of my own book on the subject in 1978 had been one of the factors that caused Talbot Donaldson to contemplate abandoning the project, I must record my pleasure and relief that he did not in fact do so.

**Ann Thompson**

*Dr. Thompson is senior lecturer in English at the University of Liverpool.*

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# BOOKS

## Worrying about ethics

**Common-sense Morality and Consequentialism**
**by Michael Slote**
Routledge & Kegan Paul, £14.95
ISBN 0 7102 0309 8

This is a very short, very deft book which is a great pleasure to read, and rather less of a pleasure to review. It is a pleasure to read because it is clear, subtle, unpretentious and original; reviewing it is less of a pleasure precisely because it is all these things – Slote works his way from one topic to another in a lucid and persuasive fashion, but not in the interests of some tidy and easily summarized overall theory. As he somewhat hesitantly suggests at the start, what he supposes is that both common-sense ethics and consequentialist moral theories will be able to show up weaknesses in their rival's view of ethics; a consideration of these will perhaps improve both.

The sort of weaknesses he sees in consequentialism are up to a point familiar from writers like Samuel Scheffler and Bernard Williams. Consequentialism seems, according to Williams, to turn us all into servants of the good, with no right to pursue "our own" projects, with no right, even, to develop anything you might call a "good character" in case that character should itself turn out to be at odds with the pursuit of good consequences. (Suppose you couldn't bring yourself to kill the baby whose death was needed if some awful disease was to be prevented from killing a dozen other children: . . . ) Scheffler, less bluntly hostile to consequentialism, contents himself with pointing out numerous occasions where our ordinary notions of duty are much less rigorous than the consequentialist's – few of us complain of the man who gives £50,000 to Oxfam that he could have given another £10,000 before he made himself worse off than those he was trying to benefit.

Slote picks up something not, I think, noticed in the literature before; this is that the "permissiveness" of ordinary morality extends both to allow us to act in a less other-regarding way than consequentialism and in a *more* other-regarding fashion. it's not just that I am not obliged to sacrifice my deepest and most serious projects to assist anonymous others; it's that I may, if I feel like it, sacrifice all of them. There's a sense in which their being mine to not bother with, too. We can't explain common-sense morality's rejection of rigid consequentialism as part of a concern for the kind of thing Bernard Williams minds about so much – integrity, consistency of character, personal projects and so on – for it equally allows us to sacrifice all of these things too. Some notion of individual autonomy appears to trump even a concern for other sorts of autonomy.

Launched down this track, Slote considers several other issues of a crucial kind; he denies the "practical" quality of moral judgements – in this instance boldly controverting both Aristotle and Stuart Hampshire (but perhaps not Mill, Donald Brown, John Lyons and some other recent utilitarians). He considers the thought that "satisficing" consequentialism is an improvement on maximizing consequentialism, but thinks that some scalar conception of morality is actually demanded both by consequentialism and ordinary morality, though he is not sure quite what it implies.

Towards the end of the book, he returns to some of the topics which preoccupied him in his *Goods and Virtues* (1983). Here he worries about the way in which subsequent events can make our actions right and wrong – a generalization of the worries which Bernard Williams and Thomas Nagel raised in their discussions of moral luck. The man who fails to pay attention while driving and has an accident really does strike as more culpable than the man who fails to pay attention and doesn't have an accident; yet we find it exceedingly hard to see what we are blaming him for. Both were, you might say, identically stupid, but not, apparently, equally blameworthy. In his earlier book he worried about the way in which questions about whether we have or haven't enjoyed some good or other appear to be vulnerable to what happens next.

If you have a good education, but a stroke at the age of twenty deprives you of the chance of making any use of it, did you really have a good education after all? It seems queer to suppose that whether you did or not can depend on what happens *afterwards* – but exceedingly hard to get away from the ordinary habit of thinking it does. As I have already suggested, Slote does not hand out answers to such puzzling issues. What he does, and does very well, is set out their puzzling features in a way which not only illuminates the issues at stake but suggests without histrionics why we ought to worry about them, too.

**Alan Ryan**

*Alan Ryan is a fellow of New College, Oxford.*

*A History of Philosophy in Australia* by S. A. Grave, published by the University of Queensland Press at £25.00, traces the development of the subject from 1840 to 1980.

## A grip on reality

**Reality and Reason: dialectic and the theory of knowledge**
**by Sean Sayers**
Blackwell, £19.50 and £7.50
ISBN 0 631 14022 0 and 14274 6

Is the world knowable? If it is, how do we manage to get it wrong so often? Sean Sayers' first answer to the first question is Lenin's, whom he acknowledges, along with Engels, as his philosophical inspiration: the world is knowable, but only because consciousness is a reflection of reality. In addition to Lenin, Sayers' draws heavily on Hegel. He wants to use the dialectical method to extend and deepen Lenin's reflectionist theory of knowledge contained in his *Materialism and Empirio-Criticism*, a work not usually taken seriously by analytical philosophers. He begins with Lenin's ideas, but only as a first approximation because these are flawed. They are flawed, Sayers says, because they embody dualism – the idea that there is the world on one side, and there is the knowing subject whose consciousness reflects the world on the other. Sayers wants realism, "the belief that there is an objective, material world, which exists independently of consciousness, and which is knowable by consciousness", but a realism minus dualism.

What realisms are on offer? There is direct realism, the idea that truth is manifest, that seeing is knowing, but this cannot explain the fact of error. Lockean representative realism, according to which we perceive not the world but its image or representation, is better. But it is destroyed by Berkeley. And then Kantian dualism, which isn't really realist, so Sayers says, tends to be subjectivist.

Sayers is against Locke and Berkeley and Kant. He is for a cluster of theses, not all of which sit happily with one another. He is a reflectionist via Lenin, "all ideas – false as well as true – reflect reality". In fact, "there is truth in all forms of consciousness – in the creations of the imagination, in dreams, in delusions", and "subject and object, appearance and reality, are opposites which exist in unity".

But how can appearance reflect reality if it is the same thing? At this point dialectic is called on, but here Sayers lost me. In any case, there are independent arguments, which are not very good. For example, of course things can be both the same and different: "As I write, the paper is being changed . . . it is the *same* piece of paper, the *same* pen nib which endure through my writing". Change preserving identity is supposed to justify difference in sameness at a particular time.

Another question now looms: if appearance and reality exist in unity how is error possible? Sayer's answer is: well, there is less error than you think. "Truth and falsehood are matters of degree. All ideas reflect reality, but only more or less adequately, more or less truthfully". What gives this idea whatever plausibility it has is a confusion between reflecting as corresponding to and reflecting as being caused. Our beliefs may well be caused by the real world (if they are caused by anything then it must be the real world) but our beliefs need not correspond to reality.

The book contains an interesting discussion of Freud and another of psychoanalysis in general, the latter based on the bold premise that in testing a theory of knowledge one should measure it not against conventionally accepted knowledge like physics, but against disputed knowledge like psychoanalysis (and Marxism) "for it is in these areas that epistemology has a *practical* effect". Like changing a few minds.

Sayers makes interesting connections with the work of American analytical philosophers like Putnam, Kripke and Davidson but not, he says, "to make a marriage of analytical and dialectical thought". He prefers the latter. I was conscious when reading this book how much I prefer the former. But to the reader who doesn't let me commend this book as a good example of contemporary radical philosophy.

**Peter Gibbins**

*Dr Gibbins is lecturer in computer science at the University of Bristol.*

## Missing the point

**Thinking about Things**
**by Brenda Judge**
Scottish Academic Press, £12.50 and £8.50
ISBN 0 7073 0356 7 and 0456 3

What is the nature of representational thought, very broadly conceived? The topic, asserts Brenda Judge, "has been and is still surprisingly neglected". But what is surprising here is surely the author's perception of the contemporary philosophical scene.

I am rather reminded of Ryle's fabled visitor to Oxford, who is shown the colleges and the laboratories, the Bodleian and the Ashmolean, and then asks "But where is the University?" It is as if Judge, in a similarly point-missing way, has seen philosophers debating (for example) questions about anti-realism, *de re* beliefs, the relations between folk psychology and cognitive science, and then asked "But where do philosophers in the Anglo-American tradition discuss the nature of representation itself?" The richly developed, many-stranded inquiries which we associate with names like Dennett and Fodor, Evans and Stich *constitute* our going theories of mental representation. However, these are almost completely ignored by Judge: she suggests instead that we fill the imagined lacuna in analytical philosophy by turning outside to the work of Saussure and Piaget, Sartre and Merleau-Ponty.

I am left quite unconvinced that this move has anything to recommend it. And it is a bit startling to find that Judge thinks it is worth spending two thirds of a book to get to the conclusion that in language, "representation comes about not by some simple one-to-one correspondence between names and things, but through the use of sounds, marks, gestures, etc, within a context of actions upon the world". For if any philosophical point about language can by now be taken as established, this is it.

Judge's philosophy of language is thin, but her governing conception of the mind is a disaster. She claims that "all seeing is seeing-as", having earlier argued that we have no grounds for the literal attribution to dumb animals of "thoughts and other mental events such as seeing Ø as *O*". The implication is that animals, strictly speaking, do not see. This unlikely conclusion is symptomatic of Judge's essentially Cartesian view: for her, there is an absolute divide between human beings and lower animals – the latter responding to the world "only by means of simple stimulus-response mechanisms". So much, then, for all the difficulties with stimulus-response psychology; and so much for the successes of the rival research programme of cognitive psychology.

In her final chapter, Judge turns from representations to the world they represent. She distinguishes *reality*, the world as we conceptualize it, from *Reality*, the world as it is in itself. The former, she says, "is the product of our attempted description or characterization of the latter. So Reality is necessarily fugitive – when we think we are describing it, "what is actually yielded by our talk is reality": "when we think we are giving content to Reality, we are . . . turning it into reality". Which leaves us with some very nice questions about (for instance) what content we can give to Judge's talk of our interacting with and getting "pushed about by" Reality. The problems with this sort of position are entirely familiar, and yet Judge walks into them head on. A depressing end to a depressing book.

**Peter Smith**

*Peter Smith is lecturer in philosophy at University College, Aberystwyth.*

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Edward Arnold

# BOOKS

## High politics

**The Decline of British Power, 1915–1964**
**by Robert Blake**
**Granada, £18.00**
**ISBN 0 246 10753 7**

The distinguished biographer of Disraeli and Bonar Law has now tried his hand at a general survey of a 50-year period of British history. It is part of a series of which Lord Blake himself is the general editor. The principal readership is presumably intended by the publishers to be undergraduates and sixth-formers.

The result is unquestionably a workmanlike effort but it is at times difficult to believe that the author's heart is really in it. True, he has allowed himself a stimulating title and in his introduction refers wistfully to Sir Halford Mackinder, to General Karl Haushofer and to the school of *Geopolitik*. He writes: "The era of the sea-borne powers had vanished by the early 1960s. Of all the many changes which occured during the period, this was the one which affected Britain most profoundly. It is the justification of the title of this book." I was thus led to wonder whether, after all, Lord Blake might turn out to have written not so much a textbook as a work of provocative and self-indulgent originality such as Correlli Barnett's *The Collapse of British Power* (1972). But, alas, no such luck: Mackinder *et al* disappear without trace. For the author is evidently too "responsible" to lose sight for long of the readership his publishers have in view. What is evidently expected, and what at any rate we certainly get, is a plodding chronological narrative, properly underpinned by awareness of recent scholarly findings on relatively narrow topics and held in check by a sound instinct for not straying too far from conventional wisdom about the major developments of the period.

Judged as a general survey, the work is, however, somewhat uneven. For Lord Blake appears only to be greatly interested in "high politics". Hence apart from an amusing passage on changing sexual mores, his treatment of social development is as pedestrian as it is cursory. We learn that even "Dukes did not have television sets in 1914" but "that what they did have – and this was true to a level far below the ducal – were servants". As for the mass influx of immigrants from the New Commonwealth, Lord Blake, greatly daring, risks the wrath of the race relations industry by asserting that this was "neither expected nor wanted by most Britons". Even the history of industrial relations – of such central importance in accounting for the country's decline – rarely captures his attention to any serious extent. But as might be expected of a biographer of prime ministers, he is indefatigable in chronicling changes of personnel in and around Downing Street. And some aspects of the conduct of the two world wars are subjected to disproportionately detailed scrutiny. Thus the author devotes twice as much space to the Battle of Jutland as to the origins, course and consequences of the Great Strike. Similarly, of the eighty or so pages devoted to the period 1939–1945 only two can by spared for the Beveridge Report. And R. A. Butler's Education Act is despatched in one somewhat convoluted sentence. In short, Lord Blake seems to be a very old-fashioned historian indeed.

Old-fashioned or not, he possesses an admirably clear mind, which, at least on the level of "high politics", enables him to offer singularly penetrating judgements. In this work these are not so much in evidence as in his biographies. All the same, thoy are not entirely absent. An example concerns the aftermath of the Battle of Britain. Mythology has it that once we had weathered that supposedly decisive storm, the way ahead, though long, was bound to lead to inevitable victory over Hitler's tyranny. Lord Blake will have none of it: the plans of the Chiefs of Staff in September 1940, he says, emanated from cloud cuckoo land. "It was a strange article of faith, even when the war began, that Germany was on the verge of economic collapse. It was even stranger to believe this after Hitler had conquered much of Europe. In fact till 1943 Germany ran on a 'peacetime war economy' with no serious consumer shortages of anything." He admits, however, that even if the staff view was nonsense it was "useful nonsense", sustaining morale when morale was crucial. He goes on:

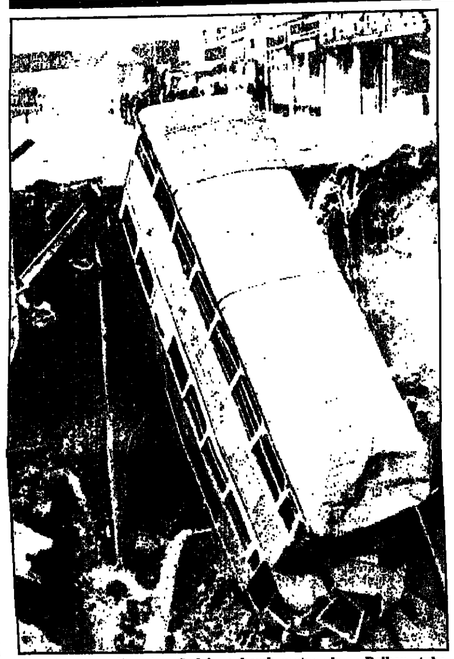
> Moreover, just as an individual's optimism sometimes turns out to be justified because of events over which he has no control, so can a nation's. Few people could have been confident that Hitler would attack Russia, still less that if he did he would be defeated. It was not certain that Japan would enter the war, still less that, when it did, Hitler would declare war on America. The British hung on, buoyed up by fantasy. They could not have reckoned upon any of these events, but the events happened.

What Lord Blake cannot quite bring himself to do, however, is to consider the wider implications of this devastating analysis for the reputations of Winston Churchill and Neville Chamberlain and of their respective followers. But to me at least admissions that central policies of the Churchill administration were based on fantasy and nonsense suggest that Chamberlain's fundamental line may well have been sounder. In short, is it possible that his alternative approach, symbolized by Munich, was wholly justified; and that his real mistake was in allowing romantics like Churchill and the Cabinet "Wets" of the day to bounce him, against his better judgement, into "guaranteeing" Poland in 1939? Should not the policy of the western powers have been instead to accept what was in effect Hitler's offer to leave them in peace, at any rate for the foreseeable future, in return for a free hand in the East?

We now know, of course, that, "buoyed up by fantasy", Churchill and his compatriots were fortunate enough to avoid outright disaster in 1940 and to be able to go on to play not much more than a spectator's role as Hitler was in due time defeated by the Soviet Union. True, nothing succeeds like success. But should we not also acknowlege that there was another side to the coin, namely that our reluctant French allies – bullied and morally blackmailed into going to war for Danzig by those who had already hi-jacked Chamberlain's Cabinet – met with a catastrophe which they might well have avoided? For the French at least reliance on fantasy and on expectations emanating from cloud cuckoo land (or rather London) did not pay off. We are no doubt right to continue to rejoice at having avoided the same fate – however much, in a certain sense, it was we rather than the French who deserved to suffer the full consequences of indulging in futile knight-errantry. But is not the time coming for us to acknowledge that in September 1939 it was not Churchill but Chamberlain and Georges Bonnet who were the more rational judges of what Great Britain and France could be expected to undertake in the face of an array of potential enemies? Lord Blake himself does not go as far as that in the present book. All the same, he has removed a boulder or two from the mountain of Churchillian mythology.

**David Carlton**

*Dr Carlton is senior lecturer in international history at the Open University.*



**A ruined bus lies stranded in a bomb crater above Balham tube station, October 1940. Hundreds of people sheltering from the blitz were trapped, and 64 died. An Illustration from London at War: the making of modern London 1939–45 by Joanna Mack and Steve Humphries; Sidgwick & Jackson, £13.95 and £9.95.**

## On the sidelines

**Malevolent Neutrality: the United States, Great Britain, and the origins of the Spanish Civil War**
**by Douglas Little**
**Cornell University Press, $29.95**
**ISBN 0 8014 1769 4**

"It is a battle between the 16th century and the 20th century", wrote Claude Bowers, US ambassador to the Spanish Republic, "between the most reactionary nobility, artistocracy and church in the world and the people, and the people know the significance of the fight." By December 1936, when he wrote these characteristically innocent – and certainly unwelcome – words to Secretary of State Cordell Hull, the liberal Bowers had become a marginal figure, at odds with a State Department whose officials mostly preferred to express themselves on the subject of Spain through the very different simplicities of obsessive anti-communism. Bowers was equally out of tune with his British opposite number, Sir Henry Chilton, and with the Foreign Office, where, by summer 1936, the conviction reigned that – in Chilton's words – "Much of Republican Spain is in the hands of Communists" and the Republic ought not therefore to be assisted in its struggle.

Douglas Little's thorough – and thoroughly depressing – study charts the emergence of the official Anglo-American attitude of "malevolent neutrality" towards the beleaguered Republic. The policies of major powers towards lesser countries riven by civil war, Little rightly reminds us, originate not with the outbreak of hostilities but during the years before. British and American policy towards Spain between 1936 and 1939 was thus the natural extension of a tradition of "acrimony rather than amity" in their relations, aggravated during the years of the Second Republic itself. From the very birth of the Republic American officials, taking their lead from Ambassador Irwin B. Laughlin, saw reds under every Spanish bed: when the monarchy fell in April 1931 Laughlin lamented, with all the monarchism of a true Republican, that "communistic falsities have captivated the 17th-century-minded Spanish people." This level of analytical rigour was largely maintained thereafter, both in US embassy and consulates within Spain and in the State Department, despite the efforts of the more open-minded Bowers after 1933; reforming policies were liable to be labelled "communistic", every liberal a potential Kerensky, and strikes the product of "left-wing extremism". If British official views were initially much more subtle and accurate, as time passed they tended increasingly to converge with those of US "analysts", while adding to the latter's crass anti-communism the British ruling class's favourite ingredients of ethnocentric condescension and social myopia. Only between September 1933 and the end of 1935, with more conservative governments in office in Madrid, was the bolshevik bogey temporarily neutered.

Pre-civil war British and American policies were, of course, dictated by perceptions of self-interest, diplomatic and economic: in the case of both countries, concern for their investments in and trade with Spain; in Britain's, for the implications of Spanish developments for the rest of Europe; and in that of the United States for their possible repercussions upon her own Latin American backyard. The reforming governments of 1931–33 and the Popular Front government of 1936, with their autarkic response to Spain's export crisis, their threats to British and American interests in Spain – Rio Tinto, the ITT-owned telephone system, the Barcelona Power, Light and Traction Company and so on – and their tolerance towards labour demands, enjoyed poor and worsening relations with Britain and the United States. The sharp deterioration in economic and hence diplomatic relations which followed the Popular Front election victory in February 1936 was reinforced by Anglo-American certainty that Spain was in a state of chaos created by the left, nurtured by Moscow, inseparable from left-wing republicanism, and from which the machinations of right-wing conspirators, encouraged by American and British business interests in Spain, offered the only salvation. "If the military coup d'état, which it is generally believed is being planned, does not succeed", wrote Chilton to Sir Robert Vansittart as early as March 1936, "things will be pretty awful."

By July 1981, as Little convincingly demonstrates, both Whitehall and Washington viewed the Spanish situation as involving a threat not so much to European peace as of a "communist" contagion likely, if unchecked, to attack Portugal, France and Latin America. "Communism", as throughout the Republic, was defined with a looseness consistently characteristic of US diplomatic and business terminology and increasingly typical of British officialdom as the 1930s wore on. Ironically, non-intervention, adopted at least in part out of the belief that a "communist-led" Republic was beyond help from the democracies, played a major part in eventually handing over the Republican cause to effective communist control.

**Martin Blinkhorn**

*Dr Blinkhorn is head of the department of history at the University of Lancaster.*

## Divided opinions

**The First Labour Party 1906–1914**
**edited by K. D. Brown**
**Croom Helm, £17.95**
**ISBN 0 7099 3209 X**

The relative political strength of the Liberal and Labour parties on the eve of the First World War continues to exert a powerful fascination over British labour historians. Was the Liberal Party still intact, only to be destroyed by the "solvent" of war, or was the Labour Party seriously threatening its control of the progressive vote in British politics? This excellent collection of 12 essays adds to the debate and generally gravitates to the latter view, though Brown's introduction admonishes such an approach: "Some of the contributors to this volume are of the opinion that the battle for working class hearts was already won by 1914" but it was the war which "helped to break the Liberal Party".

The book is divided into two parts – six essays deal with the organizational and regional aspects of Labour Party development and six others examine some of its political policies. Among the first group David Martin argues that the ideology of the early Labour MPs may have been shaped more by their day-to-day experiences than their reading and religious background. And, in more expansive mood, he maintains that "on balance Labour consolidated its position rather than lost ground in the years between 1910 and 1914". Peter Stead suggests that this was particularly so in Wales and, more cautiously in the light of the Liberal Party's ability to hang on to its working-class vote, W. Hamish Fraser notes some improvement in Labour's organization in Scotland.

Chris Wrigley provides a free-flowing account of how the Lib-Labism of trade unions was replaced by a "socialist-flavoured Labourism" between 1899 and 1914. Indeed, all the articles in the first part, no matter how cautious, testify to Labour's general growth and consolidation. It is not enough for Brown to dismiss the challenge of Labour by asserting that it did not do well at elections and that there was random inequality in the franchise which affected the Liberal Party just as much as the Labour Party. It is wise to remember that an election agent was essential if any local party organization was to pull its full strength and clearly the Liberals were better placed in this regard than Labour before the First World War.

The second group of essays, dealing with policy, tend to be more critical of the Labour Party and go some way to sustaining Brown's assertion that its capacity for independent political thought remained "immature". Nevertheless, an exceptionally fine essay by Pat Thane suggests the opposite, for the Labour Party held distinctive, if divided, views on the Liberal welfare reforms and should not be seen as simply offering its passive support. Indeed it saw the welfare measures as only a second best solution to deprivation. Roy Douglas's article on the constitutional crisis is not altogether supportive of Brown's stance and Clive Grigg's contribution on Labour and education underestimates the significance and the distinctiveness of the School Meals Act of 1906. To the Labour Party it was one step on a path to social and economic citizenship for the working class; to many Liberals it was the opening of the floodgates to municipalization and all the extra expenditure that would involve. There were, indeed, marked differences between the policies of the Labour and Liberal parties and these ought to be emphasized just as much as the policies which they shared.

Dr Brown opened this book with a quotation from an article written by Philip Snowden in 1913, in which it was maintained that Labour's parliamentary representatives were "there mainly by the goodwill of Liberals". He should be congratulated on eliciting such a fine collection of essays, some of which challenge Snowden's, and his own, pessimistic assessment of Labour's position on the eve of war.

**Keith Laybourn**

*Dr Laybourn is senior lecturer in history at Huddersfield Polytechnic.*



# BOOKS

## Direct from God

**Religious Enthusiasm in the New World: heresy to revolution**
**by David S. Lovejoy**
**Harvard University Press, £22.75**
**ISBN 0 674 75864 1**

Professor Lovejoy of the University of Wisconsin, has taken a promising theme – the history of religious enthusiasm in the American Colonies down to the War of Independence. He defines enthusiasm as a belief that one personally enjoys direct divine inspiration, and he gives brief accounts of many individuals who felt entitled to suppose themselves channels of divine communication, like Ann Hutchinson and Samuel Gorton in early 17th-century New England. He broadens his definition, however, to include 18th-century revivalists like George Whitefield, and Quaker humanists (rather than enthusiasts) like Anthony Benezet, whose father had been a "French Prophet", but who in America became first Quaker and finally Moravian.

This in turn enables Professor Lovejoy to link enthusiasm, the Great Awakening and the War of Independence.

> The revivalists of the 1740s, [he says] identified their New Light with a New World promise, they resisted stuffy establishments which suppressed their experimental relationship with God: for their boldness, for their presumption, they were dubbed enthusiasts . . . in 1776 American patriots, for a variety of reasons, rejected an imperial system of government which, they argued, frustrated the realization of a political order which the New World afforded them: they, too, were called enthusiasts.

This was a change in the use of the word, however, and it indicated little more than the extent to which the Great Awakening had been a murginal event in the social context of a general 18th-century Protestant decline. Of course one can write, as does Professor Lovejoy, that "millenialism . . . enjoyed a secular phase as enthusiasm assumed a political scope and a wave of nationalism swept over a former colonial people". Nationalism, however, the driving-force of 1776, is what needs to be explained here; its emergence in the last days of the ancien régime was not a matter of a secularized eschatology, nor did it depend on prophets who appealed to direct divine inspiration A secular passion for the rights of property was the end, not the beginning, of a religious tradition, and the Protestant grip on the American imagination had to be reasserted in haste once independence had been guaranteed by the war of 1812.

The trouble with Professor Lovejoy's approach to the 18th-century is that he concentrates on individuals rather than on the social history of religion. This approach has its rewards, as in the story of the Huguenot Dutartre family in South Carolina, three of whom were hanged in 1724 after they had resisted arrest by the local militia and killed a magistrate. The Dutartres had come to believe that "they were the only family on eurth who had knowledge of the true God", and this knowledge had, predictably, freed them from civil obligations and sexual restrictions. Professor Lovejoy sees the probable connection with the earlier enthusiasm of the French Prophets, victims of Louis XIV's savage persecution of the Huguenots, but he makes little attempt to place the Dutartres in American Protestant history: the executions have been said to signal the end of significant Huguenot resistance to assimilation into South Carolinan Anglicanism. The omission is characteristic, and even when individuals are concerned, Professor Lovejoy can write at length on George Whitefield without making clear that he was not an enthusiast but a professional revivalist, a new phenomenon in a changing situation, happy to use the enthusiasm of others and as willing as they to criticize orthodoxy when orthodoxy rejected revivalism.

Professor Lovejoy has given us a good account of a minor religious tradition, and shown the influence of Old World enthusiasm on the New, but his benign view of the Great Awakening stops him from analysing his texts with the closeness which might have produced new insights into American pietism.

**John Kent**

*John Kent is professor of theology at the University of Bristol.*

**Wistman's Wood, Dartmoor: Illustration from Albion: a guide to legendary Britain by Jennifer Westwood (Granada, £12.95).**

## The magic has gone

**The View from Afar**
**by Claude Lévi-Strauss**
**translated by Joachim Neugroschel and Phoebe Hoss**
**Blackwell, £19.50**
**ISBN 0 631 139664**

I recall, a quarter of a century ago, the sense of excitement engendered by a reading of *Anthropologie Structurale*, wherein all kinds of seemingly disparate social phenomena were surprisingly shown to be systematically connected. This is the third such collection of essays to be published by the most renowned of living anthropologists. Technically the pen of the Master has lost none of its old cunning, yet somehow the magic of those earlier pages has evaporated.

The difference is no doubt explained by the fact that the structuralist method, which once appeared so revolutionary and full of promise, has long since been absorbed into mainstream anthropology. Barring a few reinlist dichards (who are still to be found in some British and American universities), no one nowadays disputes the efficacy of that method when it comes to elicifing the architectonics of semiotic systems. Like every intellectual movement that succeeds in changing our way of perceiving the world, structuralism in anthropology has had to pay the price of success: what was once revelatory and astonishing is now almost self-evident and even banal. Moreover, certain of structuralism's converts and exemplifiers, such as Leach, Detienne and O'Flaherty, have demonstrably managed to excel their teacher in the daring, scope and subtlety of their analyses. The present volume therefore has the unintended and melancholy effect of depicting the domestication of what had formerly seemed an exuberantly savage mind.

Lévi-Strauss asserts in his preface that this collection's particular value lies in the heterogeneity of its subject matters. Hence the title (*Le Regard éloigné* in the original). But one doubts whether this jackdaw-like facility at picking up and putting together all kinds of objects will impress many readers, who are more likely to notice how perfunctory is Lévi-Strauss's treatment of diverse intrinsically interesting themes in these often surprisingly brief articles. Some of these topics have been more thoroughly or more memorably discussed by Lévi-Strauss himself in earlier publications. An example is chapter three on "The Family", which is an abbreviated version of a fuller and useful exercise in elementary anthropology which originally appeared in a volume edited by Shapiro twenty years ago. Chapter 17, on the Grail theme, is a modest addendum to the author's earlier, and strikingly original, comparison of the European myth with complementary themes in the Amerindian and Egyptian traditions. Two chapters rehearse the structuralist indebtedness to Saussure and Jakobson – little new here.

One searches this volume in vain for the sudden, illuminating *apercus* which had made the earlier works so richly rewarding. Instead, we are treated here to such ponderous platitudes as "one can undertake no research whatever without first collecting and verifying all the data" – a statement which lacks even the merit of being true. One cannot help noticing the absence, in a book which proclaims its author's continuing "loyalty to the principles and methods of structuralism", of any attempt to engage with the radical critiques of anthropological structuralism formulated during the past two decades by such as Derrida, Foucault, Wilden, Sperber and Needham. Nothing here of the grandeur of Lévi-Strauss's onslaught on Sartre's *La Pensée Sauvage*.

Instead we have a nitpicking contest with David McKnight over the details of Wikmunkan ethnography, perhaps an attempt by Lévi-Strauss to prove himself more empiricist than the obtuse Anglo-Saxons themselves. There is also a longish debate with Marvin Harris, than whom there could hardly be an easier target in all anthropology. Berlin and Kay's *Basic Color Terms*, which invokes the Rousseauesque nature/culture problematic with particular intensity, appears to merit no more than a few paragraphs of desultory discussion. At this stage in the debate, and remembering Sahlins's elegant dissection of the issues in *Semiotica* a few years ago, a brisk and practised *jeu de mots* no longer suffices.

These remarks on the theory of colour perception are inserted into a chapter entitled "Structuralism and Ecology" to which I had turned in hopes of finding a contribution by Lévi-Strauss to the vital themes debated in recent writings by feminists and philosophers of the environmentalist movement. But the author's intention turned out to be solidly traditional, concerned, as the blurb puts it, with showing "how perceptions are conditioned by both the existing ideological constructs and by prevailing economic and technical conditions". Here one cannot help remembering that this very feat was brought off long ago, and with exemplary force, by Evans-Pritchard in *The Nuer*.

The translation is well crafted and readable, if at times oddly Americanized.

**Roy Willis**

*Roy Willis is research fellow in social anthropology at Edinburgh University.*

## Religion in society

**The Sacred in a Secular Age: toward revision in the scientific study of religion**
**edited by Phillip E. Hammond**
**California University Press, £26.25 and £10.50**
**ISBN 0 520 05342 7 and 05343 5**

There is a festival air about this book. Sociology seems to be celebrating its escape from the positivist prejudices of its founding fathers. Social processes of inevitable secularization are no longer the immovable centre of a social science universe in which religions were at best minor planets and more commonly appeared as ephemeral epiphenomena like shooting stars soon burnt out. In a kind of Copernican revolution the new centre is the real world out there, with the mystery of its persistent religions, and its defiance of all simple, linear, single-process theories of human affairs. The revolution has taken only two decades and while it has no single Copernicus there is an impressive bevy of scholars drawing on empirical studies and questioning "methodological atheism" as they start the very independent variable of religion in society.

There are 21 of them here, a powerful party of revisionists assembled in almost unanimous critique of the old orthodoxy of classic secularization theory. Bryan Wilson, its most recent high priest, opens the debate with a clear articulation of the theory of secularization. According to this, in the face of industrialization, bureaucratization, urbanization and a disenchanted and rationalized worldview, religion either vanishes or is relegated to a private pastime of individuals. Wilson places the apparent reversals of secularization, seen in religious revivals, reforms and new movements in the insignificant backwaters of society and derives them from the "native dispositions of man deep-laid in irrationality" and therefore due for replacement in a rationalized future.

Others are not so sure. Eileen Barker is not at all clear whether the new religious movements are to be seen, with Wilson, as "the last whimper of religiosity" or as "the vanguard of a new religious revival". James Beckford shares the same question, and looks at the new religions not through the rather tired concepts of charismatic leaders and deprived adherents, but in terms of new and varied forms of social organization – informal networks which are also appearing to support particular concerns within mainstream religions. These creative structures express religious ideologies and dynamics and cannot be understood as part of secular social processes. Also on the new religions, James Richardson presents the secularization thesis with the problem that the young converts represent the most affluent and best educated generation in Western history.

To cope with this he joins others in proposing a cyclical rather than a linear view of religious history. Rodney Stark develops this by seeing secularization as a self-limiting process that generates counter-responses. While eroding some religious forms it stimulates revivals and innovations elsewhere; religions are always dying and being reborn. This idea is taken further in Han Moi's dialectical model. Religion both legitimates the social order, desacralizes it by a critique of its evils, and restores wholeness by resacralizing the innovative forms it has provoked. This is supported by an autobiographical account of his conversion from Marxist and Weberian theories while in a German prison as a young Dutch resister.

In the same vein Roland Robertson notes the new view of the social process being opened up by Marxist revisionists who allow for a broader view of reality in which metaphysical ideas and moral constraints operate as positive factors in history. The secularization theory is similarly affected by the revision going on in the philosophy of science. Here Robert Wuthrow describes the replacement of the allegedly objective and coolly impersonal image by a more relative and personalized view. Allowing for the essential part played by the personal situation and stance of the social scientist, any conflict between science and religion may derive more from the precariousness of the scientist than from the defects of religion.

These are fairly theoretical critiques of the secularization theory but there are others grounded in empirical studies. Among these Benton Johnson examines religion and politics in America, with all its ambiguities; but at least there is no simple secularization process to be identified. Nor is this supported by the modern secularized interpretations and treatments of sickness; Meredith McGuire shows how these are increasingly challenged by the new interest in holistic and spiritual methods and the alternative therapies and healing cults. Indeed, if the religious dimension continues to prove as irrepressible as these essays suggest, we wonder if there may yet be a future volume on "The Secular in a Sacred Age".

**H. W. Turner**

*Dr Turner is director of the Centre for New Religious Movements at Selly Oak Colleges, Birmingham.*

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Duke of Milan; and Leosthenes and . . . obliged to take the source seriously . . . most distressing of plays". Even so he . . . English at the University of Liverpool

# BOOKS

## Science adviser

**The Education of a College President: a memoir**
**by James R. Killian, Jr**
MIT Press £19.95
ISBN 0 262 11096 2

How many British vice chancellors achieved that office at the age of 45, not from a lecturing and professorial career but from a background initially in journalism, followed from the age of 35 by university administration? Admittedly, in Dr Killian's case the journalism was at the Massachusetts Institute of Technology – with the prestigious *Technology Review* – as was the administrative experience. Since his only other academic experience before assuming the presidency of MIT had been as a student at that same institution, one might have expected a certain narrowness in this book. It is a tribute to the intellectual vitality of both MIT and Dr Killian that nothing could be further from the truth.

The book is really more a memoir about MIT than an autobiography in the usual sense. Starting as assistant editor of *Technology Review* in 1926, and rising through various administrative channels to become president of MIT in 1949, then chairman (later honorary chairman) of the MIT Corporation, Dr Killian was there at all the major developments of five decades. But in telling their story, he reveals a breadth of learning, an imagination, a perspicacity, a grasp of detail, and a grace and wit (these last being, unsurprisingly, perhaps a little old world in flavour) that signal plainly enough how he succeeded in his high office.

His big chance, and MIT's, came with World War II, which led to the prolonged absence of MIT's president, Karl Compton, in Washington, leaving his executive vice president, the young Killian, in charge. For MIT, the War also meant the establishment of the Radiation Laboratory, and an educational and research legacy that included computing, instrumentation and other centres of excellence. After the War, there came the Lincoln Laboratory, a major contract research centre, funded by the Air Force and managed, off-campus, by MIT. Educational reforms in the teaching of engineering, the introduction of what is still a pioneering undergraduate research opportunities programme, and the development of schools of molecular biology, economics, management and science, technology and society were among the postwar achievements. They were products of a determination to make MIT not merely a premier engineering school, but also one in which the engineering was rooted both in science and in a humane appreciation of the social, economic, industrial and political context of science and technology.

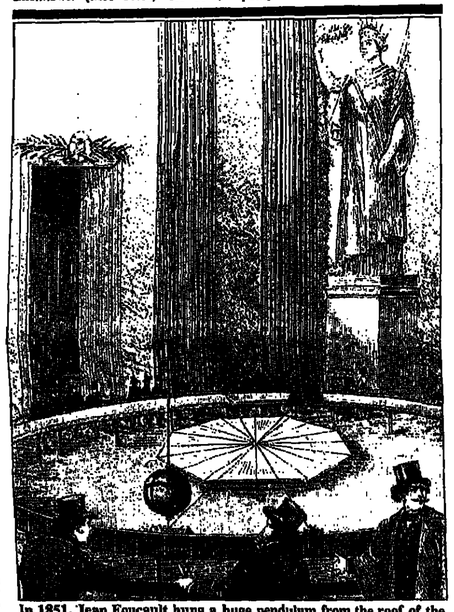
These last concerns connected with another facet of Killian's career, that of adviser in Washington, most notably as the first ever presidential special assistant for science and technology. In the climate of concern that was created in the United States in 1957 by the successful launching of Sputnik I, President Eisenhower turned to Killian, aided by a high-powered presidential science advisory committee and subsidiary specialist panels, to assist him with a programme for strengthening American science and technology, not least in the areas of space and defence. Killian had previously served Eisenhower as chairman of a secret task force, the Technological Capabilities Panel, which in 1954–55 undertook a review of *American military and intelligence technology*, and following which the Thor, Jupiter and Polaris missile programmes were accelerated, and the U-2 reconnaissance system developed.

Dr Killian does not repeat here all the details of his service to Eisenhower, as these are available in his 1977 memoir *Sputnik, Scientists, and Eisenhower* (MIT Press). He does, however, recall the dismay with which he greeted President Nixon's decision of 1973 to dismantle the White House science and technology structure, and the part that he subsequently played, through the National Academy of Sciences and other means, in reviving the role of science adviser to the president. He also offers the thought that it is hard to believe that President Reagan had the benefit of adequate scientific advice when he made his 1983 proposal for a "star wars" anti-ballistic missile defence.

There is in Dr Killian's educational philosophy an emphasis upon the education of the whole person which makes refreshing reading in the current climate in Britain. Clearly, this philosophy reflects his own life. If this is what the Jarratt committee had in mind when they recommended that British vice chancellors should become more like American university presidents, then who could object.

**Philip Gummett**

*Philip Gummett is senior lecturer in the department of science and technology policy at the University of Manchester.*



**In 1851, Jean Foucault hung a huge pendulum from the roof of the Panthéon in Paris, in order to demonstrate the Earth's rotation. This illustration of the event is taken from the *Oxford Illustrated Encyclopedia*, volume one: *The Physical World*, edited by Sir Vivian Fuchs (Oxford University Press, £15.95).**

## Energy demands

**UK Energy: structure, prospects and policies**
**by Richard Bending and Richard Eden**
Cambridge University Press, £27.50
ISBN 0 521 26708 0

Even though international energy markets are currently weak, with oil prices on the slide, fuel suppliers chasing elusive customers and strategic interest in energy questions on the wane on summit agendas, the timing of publication of this new study is faultless.

For, despite this apparent calm, the first three months of 1985 have witnessed the end to the bitter coal dispute and the prolonged public inquiry into the proposed Sizewell pressurized-water reactor, the sudden demise of the British National Oil Corporation, cancellation of the £20 billion Sleipner gas contract between British Gas and Norwegian interests, extreme volatility in the exchange rate (which affects the sterling price of oil, traded in dollars) and the arrival of the £2 gallon on petrol forecourts. Lurking in the background are the Treasury's radical new proposals to amend the financial framework of the nationalized energy industries, not to mention more strident calls to "privatize the lot", and continuing pressure to push up the price of electricity and gas to provide the Chancellor of the Exchequer with tax income under another guise.

Meanwhile, for its part, the Government continues to insist that energy policy is a chimera, perhaps recalling Enoch Powell's memorable advice that "energy policy is worse than the search for an illusion – it is a prescription for frustration"; or Nigel Lawson's declaration (when Secretary of State for Energy) that "he did *not* see the Government's task as being to try and plan the future shape of energy production and consumption". But this is at odds with the view of most informed commentators, including the authors of *UK Energy*. Indeed, their central thesis is the need for flexible planning, recognizing the inherent uncertainties to be faced, the long lead times involved in developing new supply sources, and the relatively short-lived nature of Britain's current near self-sufficiency in energy.

Structurally, the authors have adopted a somewhat conventional approach, with chapters devoted to the background of world energy trends and policy-making, to the evolving pattern of fuel demand by major end use sector (such as domestic, industry and transport), and to fuel supply industry by industry. They conclude with a review of energy conservation and the outlook for British energy prospects and policy. The book is well illustrated with nearly 160 figures and tables and includes a useful bibliography and index. As an introduction to the subject, it provides an excellent point of departure.

Although the authors ably pinpoint and describe the underlying trends and problems, they seem hesitant in addressing the key policy issues. In addition, although they have published elsewhere on energy economics, this book lacks an analytical framework for examining pricing, investment and strategic research and development choices. Given their considerable knowledge of energy demand, the book usefully redresses the more traditional fixation with the supply-side issues of the British energy debate of the past decade, but it is the problems of integrating demand and supply which are likely to dominate energy policy-thinking over the next decade.

Britain's current strength in energy resources has contributed to official complacency about energy efficiency, which will become all the more serious in its economic implications when British oil and gas production pass their peak and we have to return to a high level of energy importing. Although the authors rehearse the institutional obstacles to a more coherent conservation strategy, the potential misallocation of scarce capital resources within the energy sector – for example, those stemming from Treasury ground rules on investment criteria for conservation within the public sector – merits much fuller treatment.

With energy markets likely to remain slack over the foreseeable future, issues conventionally considered as *external* to a narrow definition of policy-making are likely to become of increasing importance. For example, there is clear evidence that the Treasury's puzzling and confused preoccupation with the public sector borrowing requirement is resulting in the energy sector being treated as a financial milch cow – whether via asset sales, the gas levy or over-large profit targets for the electricity and gas industries. As Government tax revenues from the North Sea may peak this year, other routes for raising finance, such as value-added tax on domestic fuels, may yet come under closer scrutiny.

Similarly, under pressure from Europe in particular, the environment has emerged as a major constraint on energy policy and a headache for British ministers. Meanwhile, ideological issues, such as institutional structures and privatization, continue to divert attention from the central issues of energy policy. Although Bending and Eden have provided a useful primer to the background trends in British energy demand and supply, the reader will need to be aware of the increasing importance of the essentially non-energy related considerations behind energy decision-making in Britain.

**John Chesshire**

*John Chesshire is a senior fellow of the Science Policy Research Unit, University of Sussex.*

A paperback edition of R. U. Cooke, D. Brunsden, J. C. Doornkamp and D. K. C. Jones's *Urban Geomorphology in Drylands* (first published in 1982) has been issued by Oxford University Press at £9.95.

## Rural planning

**Rural Resource Management**
**by Paul J. Cloke and Chris C. Park**
Croom Helm, £22.50
ISBN 0 7099 2037 7

Collaboration between authors is a risky business: although sometimes it works well, it can fail miserably. This book is a collaborative venture between two of the most energetic of the new generation of British rural geographers. Paul Cloke is perhaps our leading rural social geographer, with a number of major studies of settlement planning to his credit; and Chris Park is a physical geographer with a strong interest in ecology and nature conservation. Combining their energies and experiences in a book that advocates a "resource-based perspective" in rural planning, their basic conception is of an integrated countryside which should be planned and managed in a holistic manner.

One aspect of present practice which the authors decry is the divorce of physical planning from social and economic planning. "Rural areas offer employment and homes to a great many people", they argue, "and their needs and aspirations are paramount in the allocation of rural resources". However, although the sentiments behind this statement are admirable, I cannot accept it fully either in a prescriptive or descriptive sense. The planning and management of rural resources does, and must, fulfil national as well as local needs. In part, the rural population performs a service function for the wider society. As the authors themselves comment, "rural communities may be viewed as a primary resource without which more tangible natural resources in rural areas could not be exploited".

Running throughout the book is a basic ambivalence between these two positions – of regarding rural communities as the object (the means) and the subject (the ends) of rural planning. The contradictions between the two are not addressed, nor to my mind are they overcome by identifying rural people and their communities as resources (what the authors term "the human resource") and treating them as an integral part of the rural resource system.

Instead, this leads to a very technocratic approach which, despite the authors' best intentions, seems profoundly dehumanizing. Thus, prime tasks identified for rural planners include the need to "modernize" people's attitudes and actions and "to rationalize conflicts in resource use". The social, environmental and ethical consequences of resource management are presented as subordinate to questions of technical feasibility and strategic importance. Without any apparent irony, the authors look forward to the "controlled management of the human population" and look back approvingly to the "comprehensive rural planning" exercized by 18th-century landowners and medieval manorial lords.

Contemporary rural planning falls far short of their ideal of an integrated, corporate approach. The obstacles are "structural inertia within both local and national government planning systems, coupled with sectoral decision-making and lack of open dialogue about wider issues in countryside use and management". These could be overcome, it is suggested, through more detailed survey and objective assessment of rural resources, through a more complete and rational evaluation of alternative development and management strategies, and through greater powers of intervention and coordination for rural planners.

The authors express the belief that "there are relatively few intractably incompatible land uses which could not co-exist in mutual harmony if there were sufficient need and goodwill for this to be encouraged". Basic conflicts of interest, it seems, could be rationalized away. Not surprisingly, the authors express their apprehension at various points for politics, politicians and political ideologies, seeing these as inimical to efficient and impartial decision-making. This technocratic vision is complemented by a prose-style which is leaden and turgid. At one point, the elderly are characterized as "obvious consumers of mobility deprivation"; and the text is strewn with such phrases as the "resource management decision-making situation", "the ongoing nature of change" and "low-level socio-economic accessibility characteristics".

What is remarkable about the book is not only do I find its technocratic vision uncongenial and unconvincing but so ultimately do the authors. As the book wends its course, their enthusiasm dwindles. In the final section, "a political economy perspective" is introduced from which they deduce that their central ideal of an integrated rural planning is a "false hope" and a "pipe-dream", which ignores social and political realities. To me, the book is flawed and muddled in its conception: the argument goes round in circles and does not progress; and there is an enormous amount of repetition. The weakest chapters are the synthetic and conceptual ones; the strongest those describing particular resources and resource conflicts where each author has fallen back on his own separate strength. At various points, they contradict themselves. Chapter seven, for example, is written from the perspective of recreation as an intrusion in the countryside causing problems for legitimate rural interests, whereas chapter ten adopts the contrary perspective that the crucial problem is restricted access to the countryside and a lack of recreational opportunities.

Finally, in a brutally honest epilogue, rendered almost incomprehensible by sloppy proof-reading, the authors admit to the schizophrenic nature of their creation, divided between the perspectives of the environmental scientist and the social scientist. "We as authors", they comment, "have in effect returned to our initial 'biases'. Whatever the relevance of this book for its intended audience (undergraduate students of geography, resource management, environmental planning, land management and conservation), it presents a salutary lesson for those who would argue that all that is needed to unite conflicting perspectives on any issue is sufficient goodwill and mutual understanding.

**Philip Lowe**

*Philip Lowe is a visiting research fellow in American society and politics at the Woodrow Wilson International Center for Scholars, Washington DC.*



# SCIENCE JOURNALS

**Publishers were requested to send for review the three most recent issues of any journal that had appeared for the first time since January 1984. This collection of reviews is based on a selection of those received – several were published for the first time in 1985. A list of other journals received appears on page 32.**

## Stopping the rot

**Microbiological Sciences**
**edited by C. M. Brown and I. W. Dawes**
**Monthly**
Blackwell Scientific, in association with the International Union of Microbiological Societies,
£110.00 per annum (institutions),
£37.00 (individuals)
ISSN 0265 1351

It is the common lot of present-day scientists to wince, if not to curse long and loud when yet another journal title appears and the spectre of more heart-searching over the ever-diminishing coverage and ever increasing cost of library provision raises its grotesque features yet again. As more and more papers are published, the journals get more and more specialized and the interesting papers are ever increasingly dispersed.

But after the wincing, and very probably the cursing too, the contemporary microbiologist must face the fact – at once both grim in terms of the effort required to keep abreast of the subject and exciting in terms of the opportunities offered – that microbiology covers a broad range of very active fields in research. One recognition of this scale of activity in microbiology and in a number of other areas of science, is the emergence of a style of journal which, though not new, is different in form and purpose from the majority. It has become the norm to publish experimental work in a manner constrained (tightly) by the need to give sufficient accurate and detailed methodology and (lamentably) by the pressure of cost to be as brief as possible. At the same time the review article has apparently no stature unless enmeshed with at least a couple of hundred references, in between which the text must fight to convey whatever sense the author may have intended.

There is then a useful function for a journal which publishes papers giving an up-to-date but succinct view of research, and *Microbiological Sciences* does this for microbiology. The subjects covered in just over a year of monthly issues are a good index of the scope of what microbiologists are doing at present; there are even some papers on taxonomy, though thankfully not many. As well as the (largely commissioned) review articles of three or four pages each, the journal contains short reports, apparently from two extremely roving contributors, useful information from the TUMAS book reviews, and a centre spread – a feature that may be too technical for some people's taste. Centre spreads of recent issues have dealt with, for instance, the structure and function of *immunoglobins*, the *genetic map of Bacillus subtilis*, and the structure and function of antifungal antibiotics. Although some topics have not been dealt with very successfully by means of diagrams and often little or no explanatory text, in others the use of colour blocks has been exploited to produce elegant and informative material which is likely to be of great value in undergraduate teaching. Indeed, there are two complementary functions for periodicals of this sort: keeping the old hands in touch with a wider view of the subject, and giving the student a way into specific topics and their literature. All in all, I think these functions are admirably fulfilled.

**Chris Thurston**

*Chris Thurston is a senior lecturer in microbiology at King's College, London.*

**Virginia Indians making a dugout, an engraving by Theodor de Bry (1590), from *Oceanus: the international magazine of marine science and policy* (Woods Hole Oceanographic Institution).**

## Brain damage

**Cognitive Neuropsychology**
**edited by Max Coltheart**
**Quarterly**
Lawrence Erlbaum Associates,
£37.00 per annum (institutions),
£18.00 (individuals)
ISSN 0264 3294

Cognitive neuropsychology emerged from the intersection of two previously disjoint fields: neuropsychology and cognitive psychology. Human neuropsychology involves the classification and analysis of the disorders displayed by patients which acquired brain damage or developmental anomaly. Such patients may have selective deficits of certain areas of reasoning with relative preservation of others. Constellations of symptoms provide clues to the site of injury or disease in the brain which in less technological eras was of considerable clinical utility. Cognitive psychology involves the investigation of the component processes of thought and reasoning in normal people. With the rise of computers and information processing theories, many cognitive models have adopted representational styles that resemble flow diagrams.

Two keywords for cognitive neuropsychology are "modularity" and "fractionation". These relate to fundamental assumptions: that it makes little evolutionary sense if cognitive systems are designed so that modification or improvement of one part involves change of the entire system; that cognitive systems are therefore composed of subsystems (modules) which may be independently altered; that brain damage may selectively damage certain modules while leaving others intact; and that we may learn about normal functioning by studying such pathological fractionation. Cognitive psychologists have found that the fractionation of systems in brain-damaged patients constrains their models. The neuropsychologists have found that interpretation in terms of normal cognitive theory instead of focus on lesion site enables them to understand the nature of their patients' disorders more clearly and to devise theory-driven remediation.

*Cognitive Neuropsychology* provides a forum for research resulting from these efforts. Its editors hope to include investigations of adult perception, attention, object recognition, planning, language, thinking, memory and action, as well as developmental studies. Previous articles of this nature have appeared among more medically-oriented papers in such journals as *Brain* and the *Journal of Neurology, Neurosurgery and Psychiatry* and in more broadly-based psychology journals (*The Quarterly Journal of Experimental Psychology*; *British Journal of Psychology*). In *Cognitive Neuropsychology* they form a cohesive group, and the new journal places more emphasis on case-studies and less on hemispheric asymmetries than do its chief peers (*Neuropsychologia*, *Cortex*, *Brain and Language* and *Brain and Cognition*).

It is difficult to miss *Cognitive Neuropsychology* because of its salient, though artistically-muted, salmon cover. Fortunately, the rose-tinted exterior is not representative of the contents. In an era of increasingly short snappy articles, it is encouraging to find space given to thorough, thoughtful discussion. In places, a few papers become turgid and some of the semantic quibbling might be better left to the conference venue. Nevertheless, the articles are of a high academic standard; an entire volume can easily be read from cover to cover without stagnation.

The journal publishes original articles, discussion papers and commentary reviews. Some historical papers of current relevance are being reprinted. Articles that have already appeared include: studies of dyslexia (acquired and developmental); agnosia; naming in aphasia; closed-head injury and memory; and dementia. Among the lively book reviews is a critical survey of 11 recent publications on developmental dyslexia. There are discussion papers on hemisphericity and the language capacities of the right hemisphere; and a 19th-century study of word meaning deafness has been republished with a new introduction.

As more cognitive psychologists realize the importance of neuropsychological evidence and neuropsychologists appreciate the value of formal modelling, the centrality of this journal should become more apparent.

**Christine Temple**

*Christine Temple has recently been appointed as lecturer in psychology at Royal Holloway and Bedford New College, London.*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SCIENCE JOURNALS

# Shooting stars

**Astronomy Express**
**edited by Michael Hoskin**
**Monthly**
Cambridge University Press, £30.00 per annum, £6.00 single issue
ISSN 0265 5265

When the famous mathematician Leonhard Euler died in 1783, so many papers had be submitted to the journal of the St Petersburg Academy, *Commentarii Academiae Scientiarum Imperialis Petropolitanae*, that it took a further 40 years for them all to be published. But since he wrote nearly 900 books and research papers and over 4,000 shorter mathematical communications over a period of 60 years Euler probably did not have much time even to notice when his papers were appearing in print. Yet today's scientists grow increasingly impatient for their work to appear in print before a waiting academic world. Hence, there has grown up a species called the "rapid communications journal".

It is a moot point as to whether such things are necessary or desirable in an age where the circulation of xeroxed preprints to every outpost of scientific civilization is such a simple and prevalent business. "Rapid communications" have a tendency to offer a minimum of information and the promise of a longer "paper in preparation" which rarely sees the light of day because its authors are too busy with the more interesting business of writing new "rapid communications". Whatever your point of view about such journals, there do seem to be a sufficient number of them to meet current demand in the astronomical sciences.

At present, a far more useful reponse to the ever-growing volume of research papers would be more information-clearing houses: centres to which preprints in particular broad subject areas could be sent and then lists of titles or even abstracts compiled regularly and made available to contributing institutions or individuals. Any papers of interest you could then obtain directly by mail from their authors. A minimum of bureaucracy and expense would be required to administer such schemes; and one or two already exist in some subjects, administered by altruistic groups.

*Astronomy Express* aims at very rapid publication of manuscripts submitted on camera-ready copy, but these manuscripts need not be short as is usually the case in other letters journals. It is intended that a streamlined refereeing system (basically: yes or no) should operate. I can see the point of this (relations with your secretarial staff might become a little strained after they have retyped your camera-ready manuscript a few times), but is it really a sensible form of quality control? There already exist plenty of sites for the publication, "rapid" or otherwise, of astronomy papers: *Astronomy and Astrophysics, Astrophysics and Space Science, Astrophysics Letters, Monthly Notices of the Royal Astronomical Society* and *Nature* all offer rapid publication without page charges.

The bimonthly publication of *Monthly Notices* introduced recently seems to make *Astronomy Express* redundant, unless it can demonstrate that there are many authors wanting to publish long papers so quickly that they do not mind them appearing in camera-ready form. Although it is still early in the life of *Astronomy Express*, its first few issues indicate that there is a dearth of such authors. Only two or three papers in the first three issues (July/August/September, 1984) are more than eight pages in length and the journal has evidently received so few submissions of manuscripts that issues four to six appeared consolidated into a single issue dated June, 1985. Whether this is an adequate basis for the journal to become viable remains to be seen.

Personally, I do not believe this journal fulfills any real need: librarians are really being asked to take out subscriptions to a small number of xeroxed preprints that have two staples through the middle and a red cover holding them together rather than one in their top left-hand corners. Ironically, the papers published are probably more widely read in preprint form than in *Astronomy Express* itself. And it seems that British astronomers share these views to some extent: all 16 papers published so far in the journal have foreign authors.

Nevertheless, the editor emphasizes that he wishes to see the journal fulfill a useful function by providing information about meetings, books and other matters of interest to astronomers. I believe that *Astronomy Express* could play a valuable role if it ceased to be a journal for the publication of papers but instead published abstracts or even just the titles of all the manuscripts sent to it, so becoming an information-clearing house for astronomy. A regular broadsheet of this sort would be useful to the astronomical community, cut down on their postal bills for blanket preprint mailings, and would cost little to produce. Whether such an idea is a good one obviously needs closer examination, but I cannot help feeling that it is not a worse one than publishing a new astronomical journal. For if the *Astronomy Express* continues as it has begun, it may end up being shunted into a very quiet siding.

**John Barrow**

*John Barrow is lecturer in astronomy at the University of Sussex.*

# Live data

**IMA Journal of Mathematics Applied in Medicine and Biology**
**edited by R. W. Hiorns**
**Quarterly**
Institute of Mathematics and its Applications: Oxford University Press, £50.00 per annum, £14.00 single issue
ISSN 0265 0746

Although a wide range of mathematical methods are applied to biological problems, rarely do biologists have the inclination and knowledge to use any but the most simple. In some areas of biology and medicine to which mathematicians have been attracted, such as population genetics, there is a strong tradition in the use of mathematics, particularly probability and statistics, primarily because the basic Mendelian model is simple and unequivocal; in others, such as development and behaviour, mathematical models have had little application.

The broad aims of this journal are to "embrace the uses of mathematics in medical and biological research with emphasis upon the special insights and enhanced understanding which arise from these uses"; and to "encourage and stimulate mathematicians, particularly younger ones, by suggesting topics and situations within which their skills may be applied". These seem excellent objectives, but their realization will depend on a continued high standard of papers submitted. Many of those in the first volume were written by members of the long list of prestigious consultant or associate editors. With minor exception, the papers report new results rather than provide reviews and are not (for the areas I know) simply rehashes of previous analyses.

The range of techniques and models covered is certainly broad: of the 23 papers of the first volume, there are at least three each on population genetics, population dynamics (particularly of fish), epidemiology, and nerve action and interaction. I think, however, that this breadth of coverage, which might commend the journal to a wide audience, is its main weakness. It is also a potential source of probems in attracting readers and good-quality submissions: very few papers are likely to be in any one scientist's area of interest. The biologist working on population genetics is unlikely to have time to read papers on neural interactions; and the mathematician is unlikely to find many papers employing his own area of expertise. The relevant papers for most research workers in biology and medicine are likely to be more concentrated in the appropriate specialist journals which they would already scan regularly; and there are already other journals such as *Biometrics* and *Journal of Theoretical Biology* which cover, inter alia, mathematical applications in biology.

To be viable and useful, the journal will have to attract a regular supply of papers in at least a few areas where there are not established journals publishing mathematical papers; some areas, such as population genetics, are already well served. Meanwhile, I will wait and see what territories, within the vast area it might claim, the journal actually stakes out as its own.

**W. G. Hill**

*W. G. Hill is professor of animal genetics at the University of Edinburgh.*

# Surface areas

**Adsorption Science and Technology**
**edited by Paul A. Sermon**
**Quarterly**
Blackwell Scientific, £54.00 per annum
ISSN 0263 6174

The phenomenon of adsorption, in which molecules or ions selectively accumulate in or leave the region of an interface between two phases, has a central role in surface science. It is the crucial step bringing reactants together in catalytic reactions, and studies of adsorption are an integral part of research in catalysis. It is also important in an extremely diverse range of other topics, ranging from the embrittlement of metals associated with impurity segregation at grain boundaries, to the stabilization of colloids, with many of these phenomena being important in technology. This journal seeks to provide a focus for publication of studies in these fields, particularly for topics with a technological bias which are less well catered for in other journals devoted to surface science.

However, although the editorial advisory panel of 26 eminent surface scientists is representative of most aspects of the subject today, from fundamental theory to technology, that diversity is not apparent in the first issues. Indeed, the initial emphasis has been heavily in favour of classical studies of gas adsorption on solids, particularly in relation to the characterization of surface area and the porosity of solids from measurements of isotherms for physical adsorption and chemisorption. A small proportion of papers has been concerned with such phenomena as ion exchange occuring at solid-liquid interfaces, but in the first five issues only one paper is concerned with the application of specifically surface-sensitive spectroscopic techniques. This is sad, as such techniques have been largely responsible for the rapid development of surface science in recent years. Much of the new knowledge gained concerns adsorption on simple model surfaces, but techniques like Auger electron spectroscopy and ESCA are providing valuable insights into technologically important problems involving adsorption on materials with complex surfaces. The problem of strong metal-support interactions in catalysis, for example, has been elucidated by spectroscopic studies, not by classical gas adsorption methods. I hope that such studies will be featured as the journal moves from its initial phase, in which the members of the editorial advisory panel have contributed 70 per cent of the papers in the first volume.

I cannot recommend this journal for purchase to a college or departmental library committee with limited funds at their disposal. It is too narrowly specialized and for me conveys no feeling of the excitement of new discovery that now characterizes the study of surfaces. Although it may have a market among industrial laboratories, unless it can attract a wider range of papers, particularly from those industrial laboratories, it will remain among the list of minor journals.

**D.W. Bassett**

*D.W. Bassett is lecturer in physical chemistry at Imperial College, London.*





SCIENCE JOURNALS

# Star wars

**Space Policy**
**edited by David Green**
**Quarterly**
Butterworths, £78.00 per annum, £23.40 single issue
ISSN 0265 9646

When we do the sums for the first two issues of *Space Policy*, we find 56 per cent of the substantive contributions deal with military aspects of space, 31 per cent with general scientific and legal aspects, and 13 per cent with the civil and commercial aspects. And when Roland Deschamps of the French-led commercial launcher group Arianespace tells us in the first issue that in the National Aeronautics and Space Administration's first 25 years satellite launches divided in the proportions 45 per cent military; 33 per cent general; and 12 per cent civil, we can conclude (while hoping Monsieur Deschampe's history is better than his arithmetic) that the editors of *Space Policy* have got the coverage of their new journal about right.

On the basis of a very small sample, *Space Policy* seems to be aiming for a quadrilateral balance between major (and presumably refereed) articles; shorter contributions under the heading "Viewpoint"; reports from conferences and the like plus civilized axe-grinding pieces from senior industrial figures like Deschamps, simply headed "Reports"; and book reviews. Here, however, the editors' act has not quite come together yet. The book review section, after a useful start in the first issue, is absent from the second (also missing is the promised second part of a paper on legal restraints on the military uses of space). As book reviews seldom go unappreciated by subscribers, *Space Policy* should seriously consider appointing an editor to handle this side of things.

Teething troubles aside, none of the substantive contributions is less than worthy; indeed, the well-illustrated and well-researched article by Bhupendra Jasani of the Stockholm International Peace Research Institute on weaponry in space – especially the section dealing with so-called "kinetic energy devices" – is outstanding. The science of the matter is simple. Rockets are fine for ground-to-air and ground-to-space engagements only because their characteristically low initial acceleration coincides with that phase of flight where resistance to motion is greatest. In the resistance-free medium of space, the large fuel to payload ratio needed for rapid rocket transport becomes a disadvantage and high acceleration systems such as the various electromagnetic guns detailed in Jasani's article begin to seem more attractive.

In the long run, what will determine the success of *Space Policy* is not only the comprehensiveness and balance of its coverage in its interdisciplinary subject area but also the skill of its editors in ensuring that space engineers find something worth reading in articles by students of the commercial exploitation of space; and vice versa. And if the editors can also extend boundary-crossing comprehension to space lawyers and space strategists, so much the better: on present form something to keep space law abreast of strategic developments is badly needed. Even among contributors to *Space Policy* there seem to be lawyers who still think of space as a kind of ethereal Antarctica, so militarily uninteresting as to leave plenty of regulatory scope for international law at its most idealized. These days, sad to say, have long gone. What regulation can be got must now derive from self-restraint in the militarization of the medium on the part of one superpower out of rough respect for what the other may do in the absence of some kind of pact or understanding between them.

**Ian Bellany**

*Professor Bellany is director of the Centre for the Study of Arms Control and International Security and head of the department of politics at the University of Lancaster. He is also editor of the journal "Arms Control".*

# Rock on

**Geology Today**
**edited by John H. McD. Whittaker and Peter J. Smith**
**Bimonthly**
Blackwell Scientific, £36.00 per annum (institutions), £12.00 per annum (individuals, reduced to £9.00 for members of the Geologists Association or the Geological Society of London)
ISSN 0266 6979

It is refreshing to read amid the rhetoric accompanying the launch of a new journal a frank admission that it is smaller and more expensive than planned, but that "better things should follow". Actually, *Geology Today* is a *magazine* which has the laudable brief of attracting the interest of amateur and professional geologists alike. In addition to general articles are topical news items, briefings on exciting new discoveries, personal viewpoints, conference reports, book reviews and notices of forthcoming meetings and field trips (particularly of regional geological societies). In part, the intention is to "build up into a valuable source of reference", including series of items on, for example, geological museums, minerals species and fossils.

Each issue of 32 A4-sized pages has a cover displaying an attractive colour photograph of one of nature's geological wonders, and the text is well illustrated by line diagrams and monochrome pictures. The three main articles in each issue exemplify the tremendous range of subject-matter available. Thus, in issue two, we find the Devonian fish of Achanarras sandwiched between the mineral resources of Antarctica and layered igneous intrusions. These articles and indeed most of the other contents are both clearly written and topical, a highlight being some lively exchanges on issues such as conservation and geological jargon. But can the contents really appeal across the whole of its intended readership?

For the professional specialist who wants to keep up to date with developments in other parts of geology, the magazine has much to offer with only a few items of peripheral interest. For the non-professional, conference reports and opinions on the antics of the Natural Environment Research Council could be somewhat offputting, but the bulk of the contents should be appealing. In each main article, several of the technical terms used are defined in the margins, but decisions as to which terms to explain are often arbitrary. I think it would be better to assume a basic knowledge (say O level standard) of technical words, perhaps producing a geological time chart with a glossary of common terms defined on the back. For geology students, particularly those in higher education, practically all the contents are potentially of value, and at the very least each student society should have a subscription.

**Ian Fairchild**

*Ian Fairchild is lecturer in geological sciences at the University of Birmingham.*

# Chemicals from coal

**C1 Molecule Chemistry: an International Journal**
**edited by Igor B. Tkatchenko**
**Bimonthly (six issues per volume)**
Harwood Academic, £133.00 per volume
ISSN 0275 7567

One-carbon chemistry is primarily concerned with the carbon oxides, methane, methanol, the formamides and phosgene. Central to the field is the Fischer-Tropsch reaction by which petroleum-like hydrocarbons can be manufactured from synthesis gas (a carbon monoxide-hydrogen mixture) which can in turn be made from coal and other solid fuels. Indeed, there are few other straightforward methods by which carbon chains can be synthesized from one-carbon compounds.

Although one-carbon chemistry was fashionable before World War II, when Germany and Britain sought independence of external petroleum supplies, it languished in the 1950s with the advent of cheap oil. The renewal of interest is partly due to the oil crises of the 1970s, which made "chemicals from coal" an intriguing long-term possibility; and also to exciting advances in catalysis, which have increased the flexibility and selectivity of the various processes based on synthesis gas. Most notable are the shape-selective molecular sieve catalysts pioneered by Mobil.

Although there is more to one-carbon chemistry than the Fischer-Tropsch reaction and molecular sieves, these must have provided the inspiration for this journal. In the first three issues, 12 out of 20 papers deal with carbon monoxide, carbon dioxide and hydrogen; three deal with methanol and methanal; and five with more rococco topics such as carbonyls, formamide and iodoform.

The editorial board is impressively international and the first 20 papers come from seven countries – the Soviet Union, West Germany and France predominating. Britain is not represented, although it is unclear whether this is a statistical quirk or lack of enthusiasm for the new journal. There are surprisingly few contributions from the oil companies, many of whom have devoted large sums to one-carbon research; and nothing from South Africa, where one-carbon chemistry has actually been commercialized.

There is an excellent short review of Fischer-Tropsch cobydrogenation by Hans Schulz, but it is not clear after three issues what sort of standing the new journal is likely to have. Libraries could well hold back for a few more issues before deciding whether or not to subscribe.

**Bryan Reuben**

*Bryan Reuben is reader in chemical technology at the Polytechnic of the South Bank, London.*

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The speech sciences have a long history but it is only relatively recently that experimentation with complex models of speech processes has become feasible. At present such research is carried out separately by practitioners of Artificial Intelligence, Computer Science, Electronic Engineering, Linguistics, Phonetics and Psychology. Appropriate areas of investigation include the use of constructive mathematical analyses, computer simulations, algorithms for pattern analysis, syntactic and linguistic structures, the establishment of models of human performance and the use of computers in measurements.

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SCIENCE JOURNALS

# Down to Earth

**Annales Geophysicae: official journal of the European Geophysical Society**
**edited by Stephan Mueller**
**Bimonthly**
**Gauthier-Villars,**
**Ffr 780.00 per annum**
**ISSN 0755 0685**

A quarter of a century ago we could comfortably have considered geophysics to be the branch of experimental *physics dealing with the solid Earth* together with its atmosphere and hydrosphere. More recent studies, however, *have extended its embrace* to the planets; and since the International Geophysical Year (1967/68), the field has become so broad that there is little possibility of cross-fertilization between the atmospheric geophysicist and the solid Earth (or planetary) geophysicist, who may indeed be a geologist by training.

In recognition of the diversity and specialization of geophysics, the prestigious *Journal of Geophysical Research* published by the American Geophysical Union appears monthly in three separate parts devoted to the solid Earth, the atmosphere and the hydrosphere. Other journals of more recent vintage such as *Physics of the Earth and Planetary Interiors*, published by Elsevier, have intentionally restricted their scope to one subject area.

*Annales Geophysicae* is a French publication which makes a bold attempt to keep *the three major* subject areas integrated into a single journal. It is published almost entirely in English, although it is editorial policy to consider papers in several other European languages. The first issue appeared in 1983, but it has a much longer pedigree. It follows the integration of two older journals, *Annales de Géophysique* and *Annales di Geofisica* and is the official journal of the European Geophysical Society, which was founded in 1971 to promote interdisciplinary cooperation among European scientists concerned with the full range of geophysical studies. It retains separate editorial boards for the solid Earth and planets, the hydrospheres and atmospheres, and the upper atmospheres, ionospheres, magnetospheres and interplanetary media.

The editors are all based at European institutes and the journal makes a deliberate attempt to foster the publication of European geophysical research. In its short life it has succeeded in soliciting papers of high quality and economical length which are both clearly printed and well illustrated. Although regular issues tend to be biased towards atmospheric and magnetospheric topics, recent editions have included some special issues devoted to conference themes with a useful solid Earth component, so that the annual collection of six issues strikes a fair balance across the spectrum of geophysics. In addition, a *letter facility*, which has not yet been as well used as it deserves, permits rapid publication of short and topical articles. Collections of book reviews are included at intervals and a calendar of impending geophysical meetings at the back of each issue forms a useful reference for all geophysicists.

Whether *Annales Geophysicae* will establish a deserved position alongside other mainstream geophysical journals remains to be seen. Although it is marketed at a very competitive price, it faces some formidable competition. In the solid Earth realm, it competes with the *Geophysical Journal of the Royal Astronomical Society* published by Blackwell Scientific, which has created an established place for itself in the geophysical literature. Furthermore, the *Journal of Geophysical Research*, simply because it contains the bulk of American geophysical research funded on a scale which cannot be matched even by inter-European cooperation, must remain the cornerstone of any geophysical library.

In these times of financial stringency, it is the established journals with a clear-cut field of coverage which become *the protected species*. Cross-disciplinary journals may be of interest to workers in several departments, but they are unable to find real champions; and when economic realities have to be faced they become the first targets for pruning. Thus, although I applaud the aims and the spirit of *Annales Geophysicae*, I fear that it may not achieve the widespread distribution and access which it properly deserves.

**John Piper**

*John Piper is a reader in geophysics at the University of Liverpool.*

# IT, or not IT?

**Telematics and Informatics: an international journal**
**edited by Indu B. Singh**
**Quarterly**
**Pergamon Press, $95.00 per annum (institutions), $50.00 (individuals)**
**ISSN 0736 5853**

The terms "informatics" and "telematics" have not gained wide acceptance in this country. We seem to prefer the more comprehensive and more descriptive "information technology". But does I+T = IT, at least in the sense used by this new quarterly?

One kind of pointer to the answer is contained in the journal's first editorial, which describes informatics as "data processing" and telematics as "a new communication strategy rather than a technical system per se" – not quite my idea of modern information technology. But elsewhere the journal describes itself as focusing on "microelectronics, computer graphics, speech synthesis and voice recognition, database management, data encryption, satellite television, artificial intelligence, and the ongoing computer revolution." This sounds much more like IT, so is it a broadly-based IT journal after all?

A further, and much stronger, indication of the *actual* direction of this publication emerges from an analysis of *the 29 feature articles published in* its first four issues: with very few exceptions the papers are all concerned with various aspects of telecommunications policy. More specifically, the first four issues concentrate on international telecommunications, the future pattern of telecommunications, political aspects of telecommunications, and telecommunications trade policy in the United States. The analysis of published papers yields another interesting fact: after the first issue, all contributions are from the United States, even though the subtitle promises "an international journal". On the evidence so far, then, this is a journal devoted primarily to American domestic and international issues of telecommunications. In this sense, it is a competitor more of long-established publications such as *Telecommunications Policy* than of the newer breed of IT journals.

The articles themselves do not seem to have been refereed; indeed, they are often of the standard of a professional magazine rather than of a learned research journal. The impression of a magazine-like publication is further strengthened by the inclusion of sections on legislative developments, reviews of software, and abstracts of selected patents. This latter service is derived from the Paisearch database operated by Pergamon International. This "awareness" aspect, together with the listings of relevant United States government reports and book reviews, forms the most attractive feature of the journal. However, even here, direct reference to the original sources (Paisearch, or the National Telecommunications and Information Service) is likely to yield more personally relevant results.

For those whose main interest is in "telematics", the journal's magazine-like approach will present an alternative to the well-established and more international *Telecommunications Policy*. But those who look for research papers or surveys of "informatics" or information technology may find it more profitable to turn to *Computing Surveys*, *Computer*, the various journals produced by the Institution of Electrical Engineers and (in the United States) Institute of Electrical and Electronics Engineers or, for a less American-centred view, the *Oxford Surveys in Information Technology*.

**Peter Zorkoczy**

*Peter Zorkoczy is senior lecturer in electronics at the Open University, and editor of "Oxford Surveys in Information Technology".*

# Parallel hardware

**Journal of Parallel and Distributed Computing**
**edited by Kai Hwung and Leonard Uhr**
**Quarterly**
**Academic Press £59.50 per annum**
**ISSN 07437315**

During recent years rapid developments have taken place in the design of computer hardware – pipelined computers, networks of connected (and possibly different) computers, and array processors are all now commonplace. As these advances in hardware have progressed there has been a corresponding need for advances in software, and this has led to improved programming languages which provide the appropriate abstractions, and to new software development techniques which enable the effective design and implementation of the wider range of computing systems now feasible.

The subject area referred to as parallel and distributed computing itself contains a wide spectrum of topics. Not only does it include the design and implementation of the physical architecture of the computers and systems (whose multiprocessor elements may be centralized or distributed) but also of the parallel algorithms used and the programs which control and run on those systems. The development of the underlying theory – such as the properties of network topologies, efficient algorithms for parallel execution, and the analysis of the algorithms used – is the subject of much current research interest. In order to implement distributed and parallel computing systems effectively, we need supportive tools such as computer-aided design facilities, parallel programming languages and their compilers, operating systems, and the investigation of very large scale integration and WSI technologies.

Although papers which fall into one or more of these subject categories are to be found in nearly all of the existing computing journals, this distribution of information among so many sources and the consequent effort required to access it is itself a major problem for researchers and teachers. Thus, the appearance of a journal, edited by Kai Hwung of Purdue University and Leonard Uhr of the University of Wisconsin and devoted specifically to parallel and distributed computing is not only timely but will be much appreciated in many quarters. Also, as its authoritative editorial board is both large and international, it should attract a large number of relevant papers reflecting current developments and research directions worldwide – not just those in the United States – on all aspects of parallel and distributed computing. Indeed, papers in early issues cover most of the areas identified by the editors.

The publisher also promises to provide valuable information on "theoretical advances, innovative designs and practical applications". If they do so then they will be providing a most useful service to an ever-growing community within the computing world. However, although they claim that this journal "is aimed at managers and programmers as well as researchers, engineers and teachers, the papers published so far would suggest that the latter group will obtain the greater benefit from reading it.

**John Elder**

*John Elder is lecturer in computer science at the Queen's University of Belfast.*

**NEW SCIENCE JOURNALS FROM CAMBRIDGE**

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Published quarterly for the Royal Swedish Academy of Sciences
Volume 25 (1985): £95.00 (outside Sweden)
0004-2056

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Volume 2 (1985): £35.00 institutions, £19.00 individuals
0029-8182

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Volume 1 (late 1985): £24.00
0266-4615

**International Journal of Technology Assessment in Health Care**
Quarterly
Volume 1 (1985): £35.00 institutions, £18.00 individuals
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Published quarterly for the Intl. Association for Ecology
Volume 1 (1985): £45.00 institutions, £18.00 individuals
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Issues in health care policy
Volume 63 (1985): £38.00 institutions, £18.00 individuals
0026-3745

**Cambridge University Press**
The Edinburgh Building, Shaftesbury Road, Cambridge CB2 2RU, England



SCIENCE JOURNALS

# Building experts

**Civil Engineering Systems: decision making and problem solving**
**edited by Colin B. Brown and Paul Jowitt**
**Quarterly**
**Butterworth Scientific, £80.00 per annum, £24.00 single issue**
**ISSN 0263 0257**

The systems approach has been around for many years and lends itself easily to complex problems involved in the description, identification, analysis, evaluation and optimization of large-scale projects. The broad spectrum of techniques now available in mathematics and logic can be successfully applied to the analysis of the randomness and fuzziness inherent in many areas of civil engineering, particularly in industry. Launched in September 1983 in response to the need for rationalization of the increasingly complex and interdisciplinary nature of modern civil engineering practice, this journal successfully reflects the growing overlap between such topics as transportation problems (involving ecologists and economists), water resources and supply, structural and geotechnical problems, and many other diverse but strongly interlinked areas – all of which place on the engineer the onus of communicating with other professionals and with those who might be affected by his work.

In recent years, the industry has had to come to terms with the rapid advances in the efficiency and availability of such computational methods as numerical analyses and, more recently, expert systems, with which the late Professor John Munro (one of the founding editors of the journal) had been particularly involved. In fact, Professor Munro initiated an expert systems laboratory at Imperial College, London, dealing with such problems as contract bidding, partial prestressed concrete, and foundation engineering. It remains to be seen, however, to what extent such systems will influence future trends in the industry, as every method of analysis is only as *good* as the analyst himself; indeed, it will be extremely interesting to read the experiences which will no doubt be *reported in future issues*.

The most recent issues demonstrate that the editors have been successful in attracting *the type of quality papers for* which they had hoped, making the journal a forum for the presentation and discussion of developments of common interest, as well as presenting case-studies and recent advances of a more specialized nature in areas like construction management, pollution control, transportation, urban planning and water resources. It is particularly sad, therefore, that John Munro's premature death should have come at a time when the journal was becoming established as an archival publication.

**Roland Lewis**

*Roland Lewis is professor of civil engineering at the University College of Swansea.*

# Unstable elements

**Journal of Environmental Radioactivity: an International Journal**
**edited by M. S. Baxter**
**Quarterly**
**Elsevier Applied Science, £56.00 per annum**
**ISSN 0265 931X**

Radioactivity and its effects on the environment continue to penetrate public consciousness as man's utilization of radionuclides increases. On the face of it, therefore, the scientific community should welcome the appearance of a new journal through which major problems can be addressed.

This specialist publication is concerned with both natural and man-made radionuclides, equal consideration being given to fundamental investigations and environmental impact studies. Its scope is wide, although scientific papers on biogeochemical cycling and other process-oriented studies are particularly encouraged. The rationale for the journal seems to be a perceived need to provide a common focus for information at present published elsewhere.

It is questionable, however, whether researchers can be weaned away from their traditional preferences, especially as studies of environmental radioactivity have been published for many years in *Geochimica et Cosmochimica Acta* and *Earth and Planetary Science Letters*. In addition, relevant papers can also be found in *Environmental Pollution* and *Science of the Total Environment*, both published by Elsevier. The problem here is that the behaviour of radionuclides cannot be separated *from the environmental chemistry* of the stable elements or biological processes, so that the contents of many papers on *environmental radioactivity* will continue to be appropriate to other journals.

In an attempt to promote the success of the journal, the editor has a board of 24 scientists with substantial international reputations, representing 14 countries. Thus, the quality of the peer-review arrangements should ensure that the papers are of a high standard. Indeed, the papers published in the first three issues bear testament to the excellence to which the editorial board aspire. However, there are clearly worries that the flow of scientific papers will not be sustained, as the scope of the journal invites contributions on "controversial" aspects such as policy-making and control, methods of discharge assessment, and nuclear waste disposal.

Papers of this latter type may well become more prevalent in this journal as funds for scientific work diminish and technological improvements lead to tighter controls on radioactive discharges.

**Geoffrey Millward**

*Geoffrey Millward is principal lecturer in oceanography at Plymouth Polytechnic.*

# Offshore riches

**Marine and Petroleum Geology**
**edited by D.G. Roberts and D. Scholl**
**Quarterly**
**Butterworth Scientific/Geological Society, £120.00 per annum, £30.00 single issue**
**ISSN 0264 8172**

Launched just over a year ago with the intention of providing a *forum* for the exchange of multidisciplinary concepts and techniques of direct relevance to all concerned with *marine* and petroleum geology, this journal is well on the way to success. Indeed, by combining interest in two major sectors of exploration, the editors may well have struck on a good formula.

More than half of the volume of sedimentary rocks younger than 200 million years have been deposited in the offshore basins constituting Atlantic-type continental margins which have developed since the break-up of the great super continent (possibly two continents) Pangaea. Both academic and oil company geologists interested in these and other great prisms of sediment that have accumulated at plate boundries have barely started to unravel the stratigraphic evolution of such rock sequences, portions of which contain large undiscovered resources of oil and gas. A journal devoted to the study worldwide of these rocks, therefore, should have extensive appeal, especially if, among its broad international involvement, the journal could become the major repository for papers dealing with *north-west* European sedimentary basins.

The journal's international editorial *board seems to fulfill* the well-known criteria required to make scientific journals viable: two-thirds are based in *Europe and* over half of them have worked or work for major international oil companies; and of the four academics on the board, three hold chairs at European universities. However, although this strong European connection may augur well for the continued success of the journal, there can be no doubt that industry holds the lion's share of geodata. I hope, therefore, that more and more contributors from industry, as well as from academia, will be encouraged to publish in the journal and that the oily editors on the board will be able to twist the arms of their company superiors so that more data sees the light of day.

North-west Europe is a major oil and gas producing *region with great* potential; indeed, it should not be forgotten that its recent daily average production of crude oil by Britain and Norway has considerably exceeded that of OPEC's most influential member – Saudi Arabia. *The region needs a* journal in which the intricacies of its oil and gas riches are described. On the evidence so far, *Marine and Petroleum Geology* indicates that it could become that journal.

**Arthur Whiteman**

*Arthur Whiteman is professor of petroleum exploration studies at the University of Aberdeen.*

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This quarterly journal promotes the study of cognitive processes from a neuropsychological perspective. Cognition is understood very broadly, as including for example perception, attention, object recognition, planning, language, thinking, memory, and action. It covers neuropsychological work bearing on our understanding of normal cognitive processes as well as neuropsychological disorders of cognition arising at any stage of life span. It should therefore be of interest to clinical and cognitive psychologists, linguists, psycholtherapists, psychiatrists and neurophsychologists.

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SCIENCE JOURNALS

# Micro forum

**Interactive Learning International**
**edited by John Heaford and John Hirschbuhl**
**Quarterly**
**Sigma Press: Wiley, £32.50**
**ISSN 0748 5743**

Although the rapid exploitation of the electronic computer in all sectors of educational and commercial/industrial training has led to a variety of new publications, there are some difficulties in establishing and maintaining both circulation and content: the potential readership is multi-disciplinary in its range of applications and practice, and in its theoretical interests and experience. Although a clear need exists for encouraging dialogues between participants, the development of coordinated themes through a continuing supply of quality papers and commentaries is not easy.

*Interactive Learning International*, first published July 1984, attempts to satisfy these goals and seeks to provide an international forum for research findings and practical studies across all forms of self-instruction in terms which appeal to the "lay audience and to the experienced practitioner". Certainly the editorial board establishes links between academic institutions and commercial/industrial companies, although all the representatives in the United States are from universities; and all the European members (three to one from the commercial sector) are based in Britain. It is to be hoped that these biases are temporary and that the experience being gained in other countries (particularly in Europe) will be assimilated. However, in the articles published so far, the British/American tradition is strongly maintained.

The success of the journal has to be judged against the ways in which it can develop links between academic and commercial/industrial interests, and in which it can relate theoretical matters to practical concerns. Otherwise, authorsmight as well concentrate on more specialized journals such as *Computers and Education*, *Instructional Science*, or the *International Journal of Man-Machine Studies*.

Although it is too early to make a judgment on how well *Interactive Learning International* will accomplish these aims, the first three issues have attracted a good response from the training sector. The standard of presentation is high; the writing is generally succinct; the tone is not academic; and although articles on applications are set in specific contexts, authors have made an attempt to establish themes and provide general comments. The content is fairly equally balanced between issues on the impact of information technology on education and training, principles for designing interactive learning materials, experience and evaluation of training applications, authoring and associated software, and review articles.

On the other hand, the journal has not yet attracted papers of a more theoretical nature – including, for example, references to knowledge-based systems or to views of learning or problem solving. My impression, therefore, is that although the journal contains readable practical articles with a training and author language orientation, it lacks informed comment on related aspects of cognitive science and intelligent teaching/learning systems.

Other useful attributes are the news items, book reviews, and reviews of published courseware and software systems. The editorial policy also enables the journal to feature special themes: for example, one recent issue was related to management training.

Overall, *Interactive Learning International* deserves support, so that it may accomplish its aims more effectively. However, although it has a creditable style of presentation and should appeal to those with interests in commercial and industrial training, at present it has a national rather than international orientation; and unless it enlarges its theoretical perspectives, it will disappoint the academic community.

**J. R. Hartley**

*J. R. Hartley is director of the Computer Based Learning Unit, University of Leeds.*

# A genuine marriage

**Oxford Surveys in Information Technology**
**Volume one: 1984**
**edited by P. I. Zorkoczy**
**Annual**
**Oxford University Press, £35.00**
**ISSN 0265 0711**
**ISBN 0 19 8590032**

As information technology (IT) is now a very broad and rapidly developing subject area, the aim of providing an annual critique is an ambitious one. To quote the preface of this first volume in the series, "It seeks to draw on existing professional experience in the techniques, benefits, pitfalls and implications of this new technology to place the various developments in perspective. In particular the Surveys will review the state of the art and project trends in: the theoretical foundations of IT; its legislative, social, political and economic aspects, the systems of IT, with emphasis on those which integrate existing technologies and their applications in novel ways".

The first and last of these objectives – the state of art and the systems – are visible in the massive technical literature which grows unabated and which is read by specialists, each limiting himself to a small part of the whole. It is also visible by its fruits: the new devices and systems pour from the doors of advanced industry. Legislative, social, political and economic aspects, on the other hand, are reported in a much more fragmented way – in government reports, commissioned reports from research agencies and market analysts, in professional journals and in the quality press.

The width of the coverage, then, is daunting. The most important thing to bear in mind about this new journal, however, is that it is attempting a critique of the subject by publishing a collection of review articles by individual specialists. The success of the venture and how well the reader will be able to appreciate IT therefore depends heavily on the choice of topics made by the editor and his board, as well as on the quality of the individual contributions. In this respect, the journal gets off to a flying start. Without being exhaustive, it contains a fine review of fifth-generation computers and articles of quality on national and international IT policies, trade issues in information and communication services, technological topics such as cable networks, and application topics such as computer teleconferencing.

The last of these nicely illustrates the impact of IT, as it represents a genuine marriage of computers and communications, in which computers with enhanced electronic mail and graphics facilities are linked by networks over a wide distance, worldwide if necessary, to enable people to meet electronically. New facilities and modes of behaviour are introduced: you need not all be in communication at the same time; and it may be "better than face-to-face", since you can contemplate longer before you reply.

IT is changing rapidly, and this introduces another hazard for this type of journal – which newcomer to back. Will a seductive new IT system attract a review and then wither in the practical world; or will some newcomer look doubtful, be ignored by the journal and then flourish embarrassingly.

This important new journal should be read by all those involved in or concerned about IT.

**Frank Fallside**

*Frank Fallside is professor of Information engineering at the University of Cambridge.*

# About time

**Chronobiology International**
**edited by Alan Reinberg and Michael Smolensky**
**Quarterly**
**Pergamon Press, $85.00 per annum (institutions), $45.00 (individuals)**
**ISSN 0742 0528**

The dominant influence on life of the dark-light cycle must have been the common experience of all humans. Its documentation and the elevation of its study to a unique branch of science has occurred in faltering steps since De Mairan in 1729 showed that the sensitive heliotrope (probably *Mimosa pudica*), which folds its leaves at night, would continue in the same way – even in the absence of the cue of changes in light intensity. In the 18th and 19th centuries, biologists described such rhythms in plants and insects, proclaiming their fundamental importance and ascribing them to the influence of the sun.

During the past 60 years, the universality of circadian rhythms has been extensively documented and a host of experiments have been carried out to discover whether they are endogenous (nature) or exogenous (environmental), to chart their consequences and to elucidate mechanisms. It was not until 1959, however, that the word "circadian" (circa dies – about day) was coined to describe the approximately 24-hour cycles that occur in virtually all plants and animals. Chronobiology, a mere stripling among scientific specialities, is the study of such rhythms – be they circadian, ultradian (shorter than a day), or infradian (longer than a day). However, although such studies impinge on all biological and medical sciences, from molecular biology to social psychology, the addition of another newcomer to the already overlong list of scientific journals should provoke serious and searching questions. For instance, does the journal seek to communicate the results from a novel branch of science? Is it looking for an entirely new audience, previously deprived or neglected?

The ideas that lie behind chronobiology, then, are not new, but it is becoming increasingly recognized as an important adjunct to many, more venerable, disciplines. Unfortunately, however, this journal aims "to communicate to the specialist", putting the speciality into its own, exclusive pigeon-hole, isolating it, making it less accessible to the ordinary scientific reader. Its subject-matter covers the whole of biology and beyond, ranging from botany, cell biology, endocrinology, environmental physiology and ergonomics to medicine, pharmacology, psychology, zoology and more besides: indeed, something for all tastes. While browsing, the alert reader may gain a little insight into an unexpected, previously closed, world of rhythms of all lengths.

Officially, the journal sets out to be "a top quality journal for scientists working in the speciality". Thus, it is likely to become a journal preaching to the converted, rather than setting out to inform those whose eyes and minds are still closed. I think, however, that the authors of these learned papers might make greater impact if they sought out general journals in their appropriate field, to inform researchers in mainstream disciplines of the importance of time.

The editor claims that the journal will seek to publish with minimal delay, but no evidence is presented for the time between receipt of a paper and its publication. Instead, at the end of volume one, the editor says that he has discovered that it is too difficult to find "the eminently qualified scholars" to perform the thankless task of refereeing in such a very wide field. This is to be solved by authors suggesting "molecular graphics" to be made available to an ever-widening audience, especially when applied to molecular problems of rather more modest size than proteins. Molecular graphics is now being used by, for example, organic and medicinal chemists to study comparative molecular conformation when no receptor information is available. Chemical and macromolecular bases are being linked up to graphics terminals so that three-dimensional structural features can be searched for and correlated together.

The *Journal of Molecular Graphics* is evidently aimed at the expert practitioners in this field, rather than merely occasional users. It is published in association with the (UK) Molecular Graphics Society, a newcomer to the learned society family. Its highly successful scientific meetings are abstracted in detail in the journal – itself a useful aspect of the contents. The majority of original papers are highly technique-oriented, being for the most part descriptions of software developments. These in turn comprise two somewhat overlapping areas.

In one, general concepts and new algorithmic approaches – for example, to considerations of molecular surface modelling and databases – are described. The other equally prominent area involves the description of individual computer programs; this serves as an announcement forum, although it is surprising that the journal seems to make no attempt to ensure that such programs are made readily available to interested parties. The standard of the techniques papers is, perhaps inevitably, rather variable. It is indeed arguable whether the conventional journal format is appropriate for the description of computer programs that in some instances are only minor variants on existing ones.

Where the journal really makes an impact, however, is in its extensive use of high-quality full-colour illustrations. Molecular graphics is essentially a pictorial science, and its results are not best appreciated solely by the written word. Thus, the reader is able to make meaningful judgements on the utility and power of the methods and programs being described.

The journal is weakest in its coverage of the results of computerized molecular modelling – such papers are generally published in journals that are more accessible to the broad mass of molecular scientists: On average only one paper per issue can be classified as a "results" publication, and these are frequently of indifferent quality. As with many specialized journals, this one would be best advised to concentrate on its own specialized area, as a unique source on methodology.

The journal has rapidly become accepted as fulfilling the need for a major forum for software developments, and with luck will continue to benefit from the increasing use of the techniques in a wide range of disciplines. The average of 16 to 20 full papers in a year's issues, many of them with full-colour illustrations, makes this journal a fair buy.

**Stephen Neidle**

*Stephen Neidle is director of the Cancer Research Campaign Biomolecular Structure Unit at the Institute of Cancer Research, Sutton, Surrey.*



SCIENCE JOURNALS

# A logical activity

**Journal of Logic Programming**
**edited by J. A. Robinson**
**Quarterly**
**Elsevier/North-Holland (New York), $85.00 (plus postage) per annum (institutions), $49.00 (plus postage) (individuals)**
**ISSN 0743 1066**

Computing science is experiencing an evolutionary phase which must soon impinge upon everyone subject to the influence of information technology – which means just about all of us. What are we given to expect from this evolution? First, computers may come to consist of vast constellations of parallel processors, dwarfing the single-processor machines of the present day. Second, computer programming may at last become a logical activity.

The first-mentioned aspiration may seem intuitively reasonable to specialists and non-specialists alike, but the other is likely to surprise not only those outside the programming community but many within it. Are not programmers already presumed to be logical people engaged in logical tasks? Alas, the reality does not yet match the presumption. For the work of most programmers consists of devising mechanistic schedules (programs) of instructions which computers obey unswervingly to yield the required output. Programs of this sort may well be "explicable" (with luck), but this is a far cry from being "logical".

The new discipline of logic programming aims to change all this. It treats programming as articulating one's knowledge about the problem under consideration in the form of non-mechanistic logical statements ("clauses"), and treats computation as the deduction of logical consequences of that knowledge. For example, if I require to compute stock-distribution plans in response to sales returns, logic programming both permits and obliges me first to describe what I know about these quantities and their interrelationships. If I then add to this description a query about sales or distribution, the result is a logic program. A "logic interpreter" implemented on the computer can then execute this program by autonomously deducing an answer to the query, so absolving me of responsibility for detailing the actual mechanisms by which computation proceeds. Programming thereby becomes knowledge-based rather than machine-based, declarative rather than procedural.

Logic programming draws upon several key developments in logic, automated deduction and the theory of computation. Theorems concerning clausal-form logic laid down in the 1930s enabled J. A. Robinson, nearly 30 years later, to formulate the famous "resolution principle", the inference system now utilized by most logic interpreters. Extensive knowledge about resolution then accumulated during its exploitation in the fields of artificial intelligence and automatic theorem-proving. The idea of turning this knowledge to general-purpose programming was conceived by Robert Kowalski and Alain Colmerauer and led in 1972 to the new language Prolog – currently the best-known form of logic programming.

This achievement promised to resolve many difficult issues being confronted in the field of programming methodology. It showed how programs could become more human-oriented, transparent and adaptable, and more amenable to rigorous verification. Yet, for a further ten years, word of logic programming spread only slowly. Possibly many potential adherents were frightened by the unnecessarily over-technical terminology of early Prolog literature or by rumours (largely unfounded) of poor execution performance. It was not until 1981, when the Japanese unveiled their stunning Fifth-Generation Project – with its commitment to logic as the means of achieving high degrees of transparency and parallelism – that logic programming became revitalized. So not long afterwards, in 1984, the *Journal of Logic Programming* was born, with the discoverer of resolution as its editor.

Most issues published so far have each comprised just four or five long research articles, these at a high technical level and addressing the main active areas – foundations, implementations and applications. The first issue also includes an extensive bibliography. The journal's declared coverage extends beyond, though includes, the immediacies of the fifth-generation initiative. Logic programming's special role there can be gleaned also from the closely allied journals *New Generation Computing* (Springer), *Future Computing Systems* (Oxford University Press) and *Future Generations Computer Systems* (North-Holland). It would be nice if future issues could begin to offer a more diverse fare than specialist research articles – such as the survey and review articles, tutorial expositions and historical studies claimed also to be within its scope.

**Christopher Hogger**

*Christopher Hogger is lecturer in information technology in the department of computing at Imperial College, London.*

# Structural insights

**Journal of Molecular Graphics**
**edited by W. G. Richards**
**Quarterly**
**Butterworth Scientific, £45.00 per annum, £13.50 single issue**
**ISSN 0263 7855**

The increasing power of digital computers during the past 25 years has led directly to the successful X-ray crystallographic analyses of many proteins, enzymes and nucleic acids. It is a truism that knowledge of these structures has had a profound impact on almost all areas of biochemical and biological science. Much of industrial pharmaceutical research in turn is being transformed by structural insights into molecules that can be inhibited, activated or modulated by drugs. The recently-evolved technique of site-directed mutagenesis, similarly based on detailed knowledge of protein tertiary structure, is emerging as an important aspect of the biotechnology of new proteins.

These new largely industrially-oriented uses for fundamental discoveries have been accompanied by the widespread emergence of computer graphics for the visualization and manipulation of molecular structures. This powerful technology had been previously exploited by the academic protein crystallographic community for purposes of electron-density fitting, which is heavily reliant on expensive computer hardware capable of manipulating many thousands of atoms in real-time.

Thus has emerged a new speciality centred on computer graphics hardware and software; the ever-decreasing cost in real terms of the former has enabled "molecular graphics" to be made available to an ever-widening audience, especially when applied to molecular problems of rather more modest size than proteins. Molecular graphics is now being used by, for example, organic and medicinal chemists to study comparative molecular conformation when no receptor information is available. Chemical and macromolecular bases are being linked up to graphics terminals so that three-dimensional structural features can be searched for and correlated together.

The *Journal of Molecular Graphics* is evidently aimed at the expert practi-

# Robot sensors

**Robotics and Computer-Integrated Manufacturing**
**edited by Toshio Sata, Gunter Spur and Nam P. Suh**
**Quarterly**
**Pergamon, £74.00 per annum (institutions), £26.00 (individuals)**
**ISSN 0736 5845**

A few years ago, there were very few robotics periodicals, and no journals of refereed papers. Now there are too many to read in detail, let alone afford with even a generous budget. Already there are rumours of some journals fighting for survival; and certainly, anyone responsible for library purchases is being highly selective in which periodicals they choose. Into this market comes *Robotics and Computer-Integrated Manufacturing* which aims to be an international journal and so joins *Robotica* and *The International Journal of Robotics Research*.

The first two issues show a particularly refreshing diversity of papers from a variety of countries. Topics include the factory of the future, computer-aided design, an optical tactile sensor, control, machine vision, geometric modelling, and design using the programming language Prolog. This range is sufficiently wide that it seems likely that several of the high-quality papers will be of interest to a given individual.

If the editors can maintain the breadth of contribution, and if potential readers can be persuaded to subscribe (which in practice will probably require them dropping some other periodical), then this new journal could provide a beneficial international integrative influence over the development of robotics.

**Peter Scott**

*Peter Scott is a principal consultant to the PEP Ltd Consulting Group, London, and author of "The Robotics Revolution" (Blackwell, 1984).*

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# Problems solved

**Journal of Automated Reasoning**
**edited by Larry Wos**
**Quarterly**
Reidel, Dfl 205.00 per annum (institutions), Dfl 95.00 (individuals)
ISSN 0168 7433

One of the less welcome by-products of the world-wide upsurge of interest in artificial intelligence (AI) and its close relative expert systems during the past few years is the explosion of journals and magazines on numerous aspects of both subjects. Typically, these include a combination of news and gossip, interviews with famous celebrities (usually the same celebrities), accounts of the Japanese Fifth-Generation Programme, and glossy advertisements for indispensible products and conferences. It is hard to envisage many of them still being published in two years' time and even harder to care if they are not. The *Journal of Automated Reasoning* is a rare exception – a serious academic journal to add to the small number that already exist in AI.

The objective of the automated reasoning field is given in the journal as "the design and implementation of a computer program that serves as an assistant in solving problems and in answering questions that require reasoning". This definition is a very broad one – covering topics of concern to researchers in many fields including automated theorem proving, logic programming, AI, and expert systems – although many potential readers might assume that the title referred to only the first of these.

Automated theorem proving was one of the earliest fields of investigation for AI, the "Logic Theory Machine" being a pioneering example from 1957. Essentially the aim is to automate the rigorous process by which a mathematician proves a theorem – for example, in Euclidean geometry – working from axioms in a painstaking step-by-step fashion, applying permissible rules of inference at each step. Even for human mathematicians, this is a tedious and error-prone activity; indeed, one by-product of this research has been to uncover previously undetected errors in published mathematical texts. The field is highly technical, inaccessible for the non-specialist, and one where considerations of efficiency of algorithms are of crucial importance. A few years ago, it would have been impossible to believe that it could ever come to have a central place in computer science; yet this is increasingly the case.

What has caused this transformation is the growing acceptance of the idea of so-called "logic programming." Developed in Europe in the early 1970s, kept alive by the single-mindedness (some would say obstinacy) of a small number of individuals, particularly in Marseilles, Edinburgh and London, logic programming was adopted by the Japanese in 1981 as a central plank in its Fifth-Generation Programme. In a logic program, a task is to be performed is written in the form of a theorem to be proved from given axioms (this may sound impossible, but is remarkably straightforward – even natural – with practice). A system which is essentially an automatic theorem prover is then used to perform the necessary proof and thus accomplish the required task. Research in automated theorem proving can therefore be viewed as an essential ingredient in the establishment of logic programming as a practical and central tool for the advanced computing envisaged for the 1990s.

Alongside these developments has been the remarkable growth in interest in automating reasoning at a higher level – capturing the rules which experts use in performing such complex tasks as medical diagnosis and the strategies (meta-rules) they use in determining which of those rules to apply in a given situation. Since, for example, doctors do not reason in the small-step-by-small-step style of mathematical logic, but in much larger steps involving rules that are only generally true and using data that may be only approximate or in some cases may not even be available, the overt concerns of researchers at this higher level are widely different from those at the lower level of automatic theorem proving.

The journal deliberately casts its net very wide, aiming for material from automated theorem proving, logic programming, expert systems, program synthesis and validation, AI, computational logic, robotics, and covering both theory and applications – and this is reflected in the illustrious 32-member editorial board. If such a broad publishing policy were really followed, the proportion of papers per issue of interest to any specific reader might well be very low (the "*Computer Journal* syndrome"), but in reality the journal seems to be predominantly concerned – at least in the first two issues – with work in automated theorem proving, a field where a genuine research community exists and a specialized journal is certainly needed. An interesting paper on expert systems and one on planning are also included, but seem out of place among the non-Horn clause theorem provers, discussions of reasoning about the equality relation in the axioms for a mathematical group, and so on, and might have been better left to other journals (such as *Artificial Intelligence*) to publish.

The first issue contains a particularly good introductory paper "An overview of automated reasoning and related fields", with sections contributed by well-known researchers such as F. Pereira (on logic programming), R. Boyer and J. S. Moore (on program verification), B. G. Buchanan (on expert systems) and C. Green (on program synthesis), with 175 references. This is likely to be widely cited in future. A useful innovation is the problem corner, where some interesting problems are set out in detail as "standards" against which other researchers can test their own endeavours.

Provided that the editors are prepared to define its focus more precisely, the *Journal of Automated Reasoning* may well come to play a valuable role in the academic literature of AI.

**Max Bramer**

*Max Bramer is head of the school of computing and information technology at Thames Polytechnic.*

# Markets for coal

**Coal Preparation: an international journal**
**edited by J. S. Laskowski**
Gordon & Breach, £114.00 per volume (two issues)
ISSN 07349343

There exists a worldwide policy to ensure a maximum use of indigenous coal resources wherever possible. However, although there are still coal seams which have good inherent qualities and can be relatively easily and satisfactorily cleaned, many seams will have to be developed which will not be first choices either for mineability or quality. The difficulties of preparing coal satisfactorily for both existing and newer anticipated markets will increase, and especially as the raw coal feed from mines will become finer, primarily because of increased mechanization to win the coal. It will also become wetter as a result of the application of water sprays underground to reduce dust concentration levels to less than six milligrams per cubic metre and so maintain the excellent records in the virtual complete elimination of pneumoconiosis.

Raw coal from underground mines, irrespective of geographical location, can contain up to 20 per cent of particles less than 500 microns in size. More importantly, however, one-third of this contains particles of less than 10 microns, with a relatively high ash content (40-45 per cent). Conventionally, coal is cleaned before sale using relative density differential principles, but because of the very long separating times required for fines below 500 microns, surface characteristic differences between clean coal and the associated high ash tailings in the feed have to be used to achieve the desired degree of cleaning. This is the basic principle of operation of the froth flotation process which has been used in Britain for about 30 years, particularly to clean fines below 500 microns to a low ash content for special coking markets. Since about 1970, however, froth flotation has also been used to treat fine coals of lower rank for the power station/industrial markets, and to remove material which aggravates the handlability, or free flowing characteristics, of the final product to which the clean fines are blended.

Environmental pressures worldwide to reduce or eliminate certain elements in coal, such as sulphur, chlorine and others, have prompted research investigations into coal comminution to free or release these elements from coal before yet again examining how they can be removed by fines treatment processes. Similarly, newer uses of coal in the form of a coal/water mixture comprising 70 per cent coal and 30 per cent water with suspension-stabilizing reagents – to be used as a substitute for oil – has also meant examinations of grinding coal finer than 500 microns to free mineral matter which can then be separated to produce a lower ash in the clean coal product. Where this coal slurry is to be used in existing oil-fired equipment, because of ash handling limitations, typically the clean coal must have an ash content of less than about 3 per cent; previously it was about 9–12 per cent for the clean coal flotation concentrates produced conventionally from natural run-of-mine fines.

For these reasons, the first two issues of *Coal Preparation* have concentrated primarily on the treatment of fine coal by flotation and other means. Generally, the cleaning of fines below 500 microns is about four times as expensive as cleaning coarser coal greater than about 12 millimetres, but cleaning the fine coal is only one part of a total system which must include clean coal product dewatering and the dewatering of the fine reject tailings produced for disposal to surface sites. Although this reject is a total waste product, the costs of disposal have to be carried by the selling price for coal, which inevitably puts at disadvantage the sale on an international market of coal which has also required a higher price to produce underground. I expect, therefore, that future issues of the journal must contain papers on the associated dewatering of the clean fine coal, and how this might be improved technically and economically, and on how the costs for tailings disposal are being reduced throughout all countries in the world.

Although the emphasis in the first two issues is on basic technical principles and the influence of various coal and process parameters on the cleaning of fine coal by flotation, equally important information is required of actual plant operating performances and where increased yields and reductions in costs have actually been obtained. As day-to-day coal preparation plant operations are very different from limited and often batch trials in laboratories, if the journal is to win and maintain support, equal publishing space must in the long run be allocated to papers devoted to more direct practical operational results and performance.

As all regional editors and the editorial board are internationally recognized experts in different aspects of coal preparation technology, I am confident that the aims of the journal to strengthen the relations between universities, research and development establishments, and industry will be achieved. The inclusion of details of conferences, symposia, courses, and book reviews under one cover should bring together all that is relevant in the coal preparation profession.

**Peter Cammack**

*Peter Cammack is deputy-chief coal preparation engineer (R&D) of the National Coal Board's Mining Research and Development Establishment, Stanhope Bretby, Burton-on-Trent.*

The first issue of the quarterly journal *Educational Technology Abstracts*, edited by Keith Roach and published by Carfax at £41.00 per annum, contains references to design and planning; teaching methods; instructional media and resources; learning; and assessment and evaluation.

The first issue of *Systems Research and Information Science*, edited by F. H. George, has been published by Gordon & Breach at $90.00 per volume (four issues).



# Making it small

**Superlattices and Microstructures**
**edited by John D. Dow**
**Bimonthly**
Academic Press, £75.00 per annum
ISSN 0749 6036

In the late 1970s it became apparent that the emergence of a wide range of new materials technologies opened prospects for fabricating solid structures with unprecedently small dimensions, in some cases only a few atomic separations in size. Indeed, some of the techniques such as photolithography and electron beam lithography have been used to make the smallest transistors and wires, including thin metallic bridges only a few tens of atomic separations in width.

But how small can we make a device or machine and yet have it still function. The devices in question are not just electronic but include novel optical and chemical devices and even miniature mechanical machines. The answers are still unknown and are complicated by their lack of understanding of a wide range of new physical phenomena, including quantum effects, that occur in structures which are very small or, like the microwires, are effectively of lower dimension: one-dimensional in the case of the wire.

Two-dimensional sheets of electrons can be created by trapping them in a quantum energy well formed by growing very thin atomic layers of one material between two outer layers of a different material. If the growth pattern is repeated to make a layered sequence of quantum wells, the resulting periodic structure is called a superlattice. If the wells are thin and close together, the previously trapped electrons can tunnel quantum mechanically through the walls of the wells and, within certain allowed bands of energies, behave rather like a free gas of electrons. The structures so formed are like simple textbook models of atoms and crystals, but their electronic and optical properties may be engineered by appropriate grading of the atomic layers. Synthetic microstructures of this type have been engineered from gallium arsenide and its alloys to build the fastest transistors, and there are prospects for ultra-fast optical transistors and novel types of quantum switch. In pure science, the microstructures form a microcosm of new possibilities.

Both the extreme pace and wide interdisciplinary nature of the microstructures field make it difficult to keep track of what is new via the established literature. Although there are abundant specialized conferences and workshops, they are not a substitute for refereed publications. Such meetings generally attempt to serve the wider community by producing relatively rapid publication of the proceedings, but there is a very wide variability in the quality of conference papers; and refereeing is often cursory or omitted altogether. Many papers are so short that they resemble extended abstracts rather than a scientific document. New specialist journals like *Superlattices and Microstructures*, however, can play a particularly valuable role in providing reasonably quick publication or refereed conference manuscripts prepared to journal standards. Indeed, the first few issues seem to be devoted to papers from a conference on superlattices held in 1984, to which there are many eminent contributions.

It is too early to tell whether or not the journal will be able to attract articles of consistently high quality which might otherwise have been intercepted by the favourite journal of the contributing discipline. However, the incorporation of regular eminent commentaries and reviews, particularly those attempting to assess and relate developments from widely different backgrounds, might help.

The editorial board is small but distinguished. Surprisingly, however, there is a distinct bias towards physics – in view of the journal's stated aim of providing for physics, chemistry, materials science and electrical engineering. Japan and Europe are somewhat under-represented, particularly in the light of an established Japanese presence and vigorous European activity in this field.

On the basis of a good, though not necessarily representative start, I shall follow this journal with interest. Provided that the problem of rigorous refereeing of such an interdisciplinary field can be managed, *Superlattices and Microstructures* might well supply a much-needed forum for communicating the ideas of what many observers are calling a new heroic age in solid-state science.

**John Barker**

*John Barker is professor in electronics and electrical engineering at the University of Glasgow.*

# Number crunching

**Communications in Applied Numerical Methods**
**edited by Roland W. Lewis and Graham F. Carey**
**Bimonthly**
Wiley, £47.00 per annum
ISSN 0748 8025

Since the early 1960s, when computers first became generally available in higher education establishments, the volume of research they have stimulated has grown steadily, particularly in technology. As the much-heralded *high-technology future should ensure* still further growth in computer-based engineering research, the future of this journal – the latest addition to Wiley's range of journals devoted to computer-based numerical methods and their applications in applied mechanics and engineering – seems assured.

Wiley were among the first publishing houses to start new journals specifically devoted to engineering computation. The *International Journal for Numerical Methods in Engineering*, launched in 1969, rapidly became the highly prestigious flagship of Wiley's journals in this research area and is the parent of a number of equally successful offspring such as the *International Journal for Numerical and Analytical Methods in Geomechanics* (1977) and the *International Journal for Numerical Methods in Fluids* (1981). Some idea of the growth of publishable research in engineering computation can be gained from the fact that these three journals were all started as quarterlies but are now published monthly, bimonthly and monthly, respectively. Of course, other publishing houses are fishing the same waters. North-Holland's *Computer Methods in Applied Mechanics and Engineering* and Pergamon's series of journals *Computers and . . .* are notably successful competitors alongside numerous smaller and more specialized journals.

In terms of subject-matter, *Communications in Applied Numerical Methods* is no different from its parent or sister journals, being concerned with new methods for the numerical solution of problems in engineering and applied mechanics. However, it is specifically intended that it should publish only *short*, refereed papers. Judging from the issues of volume one, this seems to produce a fairly rapid processing of papers, the delay between submission and publication averaging about eight months.

The editors seem to be encouraging authors to adopt a two-phase form of publication: first a short, skeleton version of a paper is published quickly, followed by a full-length fully-documented version in one of the other journals. Although this scheme is already well known in the medical and pure sciences, it will be new to many engineers who have until now been slightly incredulous of the need to rush into print with a brief precis of a piece of research in order to beat the opposition. Whether or not this new scheme is wholly desirable, I am sure that the new journal will be a success. The volume of research in engineering computation will ensure that.

The new journal is clearly aimed at anyone who is familiar with any of the other journals I have mentioned. Each issue of volume one contains about seven short papers mostly from university departments concerned with civil, structural, mechanical and materials engineering, with a small number from industrial research organizations operating in these disciplines. The journal's most powerful attraction is probably its rapid dissemination of new research ideas in computational mechanics.

**Andrew Templeman**

*Andrew Templeman is reader in civil engineering at the University of Liverpool.*

The first issue of *Computers and Geotechnics*, edited by G. N. Pande, has been published by Elsevier Applied Science.

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*by Fe Josefina F. Dy*
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**THE INSTITUTE OF PHYSICS**
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**Semiconductor Science and Technology**
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**Inverse Problems**
**An International Journal on Inverse Problems, Inverse Methods and Computerised Inversion of Data**

Editor: P C Sabatier (*Université des Sciences et Techniques du Languedoc, Montpellier, France*)

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**THE TIMES HIGHER EDUCATION SUPPLEMENT REPRINTS**
**Reviews of New Journals in the Humanities and Social Sciences**
This eight page special number was published in *The THES* on June 21, 1985.
The following journals were reviewed:
'Contributions to Political Economy', 'Cities: the international journal on urban policy', 'European Sociological Review', 'Print Quarterly', 'Parliamentary History', 'Modern and Contemporary France', 'Catalyst: a journal of policy debate', 'Religion Today: a journal of contemporary religions', 'Anthropology today', 'The British Journal of Sports History', 'Economic Modelling', 'Journal of Labor Economics', 'Portuguese Studies', 'The Quarterly Journal of Social Affairs', '*Modern Theology*', '*The Yearbook of the British Pirandello Society*', 'History and Anthropology', 'Economics of Education Review', plus a listing of journals received which may be reviewed at a later date.
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SCIENCE JOURNALS

# Cognitive amalgam

**Current Psychological Research and Reviews**
**edited by A. J. Chapman**
**Quarterly**
*Transaction Periodical Consortium*, $63.00 per annum (institutions, air mail), $51.00 (individuals, air mail)
ISSN 0737 8262

This journal is the result of an amalgamation between two earlier journals: *Current Psychological Research* and *Current Psychological Reviews*. Started as recently as 1981, the aim of *Current Psychological Research* was to disseminate original research findings to the research community as fast as possible, allowing for peer review. The camera-ready typesetting and the empirical nature of the work reported reinforced the impression of communicating current research as it emerges from the laboratory bench. The speed of review and publication was aided by a somewhat parochial concentration on research within British universities. The companion journal *Current Psychological Reviews* contained critical reviews of research topics, book reviews, and notes about advances in the computerized control of experiments.

Although the combined journal (first issued in 1984) retains the same mix, the journal itself has undergone something of a change. Taken over by a new publisher, the endearing and slightly eccentric aura of the older journals has been replaced by a more conventional glossy journal appearance, which seems also to have affected the style of contributors towards a greater formality of presentation.

In its present format, the journal can no longer be thought of as an enterprising private venture but has to compete with other international journals, a change which is often associated with a wish to attract more articles from the United States. Undoubtedly, the attractiveness of experimental reports depends on the quality of the contributors; and this is perhaps even more true of theoretical reviews. However, although there are many interesting papers in the journal, it must be a disappointment to the editors that there is still a preponderance of contributions from within the "British" tradition, including a fair sprinkling from Australia, Canada and New Zealand.

Another unusual feature of the journal, in both its earlier and latest manifestations, is the inclusion of articles from nearly every area in psychology. This means that issues contain chock by jowl papers on intuitive probability judgements, learned helplessness and lexical decisions, or smoking and academic performance, children's memory for texts, and social responses in young monkeys. However, although this certainly made the journal far more interesting reading for the enforced browsing required to write this review, it is hard to see who would feel it necessary to keep at hand a general journal covering such a wide-ranging set of topics. In these days of academic specialization, the trend is towards equally specialized journals.

The main use of a journal such as this is to provide another venue for publication of the papers so necessary for academic advancement. Rather than taking the journal itself, researchers are likely to be referred to particular articles through subject-related entries in *Psychological Abstracts* and similar bibliographical indexes. I have no idea how often articles from this journal are cited in other research papers. Although I would certainly wish journals of this kind no ill, I am not convinced of the need for their existence nor of their chance of successful competition with well-established journals of general psychology.

**Judith Greene**

*Judith Greene is professor of psychology at the Open University.*

# Hot air

**Journal of Atmospheric Chemistry**
**edited by Paul J. Crutzen and Dieter H. Ehhalt**
**Quarterly**
Reidel, Dfl 190.00 (institutions), Dfl 90.00 (individuals)
ISSN 0167 7764

Why do new journals appear? Are they a response to a real and emerging need – often in an interdisciplinary area? And as they are in the main commercial ventures by publishing houses, do they reflect greater flexibility to respond to events than the relatively staid and narrow institutional journals?

From the benevolent standpoint of answering a real and emerging need, the *Journal of Atmospheric Chemistry* is a disappointment. Their 'already exists a range of environmental journals which either encompass or direct themselves towards atmospheric chemistry. Some are commercial ventures, others are published by professional bodies. Their relative degrees of worthiness are already established. The test, therefore, is what is new in this journal that is not already covered adequately elsewhere.

Of the 22 papers in the three issues considered (volume two, numbers one to three), 15 are essentially analytical papers. The vertical distribution analysis of various compounds is very popular: flying aeroplanes and analytical chemistry is evidently an irresistible combination. However, although the measurements have some value, their unique quality and the journal space devoted to them is doubtful. Certainly, in a tightly-edited journal with competition for space, these papers would be much more succinct. There is also a tendency to describe at length standard analyses, the only novel aspect of which is that the samples were obtained from a new site. The value of presenting these reports *in extenso* is also doubtful.

The sole chemical-physical paper provides the opportunity for an interesting comparison. In this journal, the paper takes up eight pages, but it might be reasonable to expect that it should only have been allowed one or two columns as a short communication in an established chemical physics/physical chemistry journal. Similarly, the description of an optimized, but well-established, detector for nitric oxide takes up 20 pages.

There are only four chemical, reaction-based papers of sufficient originality, quality, range and depth to justify the promise of the journal's title. The disappointment is that these papers are only four out of 22; and they would be better suited to publication in established journals.

I see no need for this journal, and its demise might make authors submit more original, better written, more succinct work to existing journals. But why do these commercial journals proliferate? It may be that the professional journals have become too "pure". If authors could be assured that a sound piece of original work in an interdisciplinary area, well written in a succinct manner, would be seriously considered by a professional journal, then the proliferation of journals might cease.

**Malcolm Fox**

*Malcolm Fox is principal lecturer in pollution control at Leicester Polytechnic.*

# Journals received

**The following list of journals, though received from publishers, could not be reviewed in this issue. Those marked with an asterisk, mainly new journals for which only one issue was available, will be considered again for inclusion in next year's supplement.**

**BIOLOGY AND MEDICINE**
*Biosensors: an International* journal (Elsevier Applied Science)*
Family Practice: an International journal (Oxford University Press)
Human Toxicology: an International journal (Macmillan Press)
Journal of Controlled Release: official journal of the Controlled Release Society (Elsevier)
Journal of Free Radicals in Biology and Medicine (Pergamon Press)*
MIRCEN *Journal of Applied* Microbiology and Biotechnology: a research journal for biotechnology in the developing world (Oxford University Press)*
Neurological Research: a journal of progress in neurosurgery and neurosciences (Butterworths)
Patient Education and Counseling: an interdisciplinary journal for patient education researchers and managers (Elsevier Biomedical)
Pharmaceutical Medicine (Macmillan Press)
Psychiatric Developments: advances and prospects in research and clinical practice (Oxford University Press)
Research and Development in Agriculture (Longman)
Vaccine (Butterworths)

**EDUCATION**
Child Language Teaching and Therapy (Edward Arnold)*
Educational Psychology in Practice (Longman)*
International Journal of Applied Engineering Education (Pergamon Press)*
Journal of Computer Assisted Learning (Blackwell Scientific)*
Micromath: a journal of the Association of Teachers of Mathematics*

**ENGINEERING**
Geotextiles and Geomembranes: an International Journal (Elsevier Applied Science)
Journal of Microencapsulation: *micro*capsules, liposomes, nanocapsules, microcells (Taylor & Francis)
Precision Machinery, Medical Engineering and Mechaeopiotelectronics: an International journal of systemics (Gordon & Breach)*

**ENVIRONMENT**
Acta Oceanologica Sinica (Chinese Society of Oceanography/China Ocean Press, Beijing, China)
Aqualine Abstracts (formerly Water Research Centre Information) (Pergamon Press)
Caribbean Geography (Longman Jamaica)
Food Additives and Contaminants: analysis, surveillance, evaluation, control (Taylor & Francis)
Journal of Rural Studies (Pergamon Press)*
Mutagenesis (published for the UK Environmental Mutagen Society by IRL Press)*
Radiation Protection Dosimetry (Nuclear Technology Publishing)
Soil Use and Management (Blackwell Scientific)*

**INFORMATION TECHNOLOGY**
Computer Applications in the Biosciences (IRL Press)*
Computer Bulletin (published for the British Computer Society by Cambridge University Press)*
Computers and Geotechnics: an International journal (Elsevier Applied Science)
Educational Technology Abstracts (Carfax Publishing)*
Systems Research and *Information* Science (Gordon & Breach)*

**MATHEMATICS**
Acta Applicandae Mathematicae: an international *journal on applied* mathematics and mathematical applications (Reidel)
Acta Mathematicae Applicatae Sinica (English series) (published for the Chinese Mathematics Society by Science Press, Beijing, China)
Analyse Non Linéaire: annales de l'Institut Henri *Poincaré* (Gauthier-Villars)
IMA Journal of Mathematical Control and Information (Oxford University Press in association with the Institute of Mathematics and its Applications)
Order: a journal on the theory of ordered sets and its applications (Reidel)
Studia Logica: an international journal for *symbolic logic* (Reidel)

**PHYSICS**
Inverse Problems (Institute of Physics)*

**PSYCHOLOGY**
Changes: the psychology and psychotherapy journal (Psychology and Psychotherapy Association)



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## Universities

**AUSTRALIA**

Applications are invited for the following posts for which applications close on the dates shown. SALARIES (unless otherwise stated) are as follows: Research Fellow $20,554-$26,826 pa; Senior Lecturer $27,814-$32,905; Senior Lecturer/Reader $30,269-$34,167; Lecturer $20,554-$34,167; Senior Tutor $20,554-$26,905. Further details and application procedure may be obtained from The Association of Commonwealth Universities (Appts), 36 Gordon Square, London WC1H 0PF unless applications are invited direct to the University. Equality of opportunity is University policy.

**James Cook University of North Queensland**
**LECTURERS (2) IN DEPARTMENT OF ELECTRICAL AND ELECTRONIC ENGINEERING**
(Reference 88/106)
One position is available on a permanent basis from early 1986 and the other on a temporary basis from 1 February 1986 to 31 December 1986.
Applicants would be expected to possess a higher degree. Evidence of active and successful research in an appropriate area and recent industrial experience.
Preference will be given to those with a research strength which would be an asset to the Department.
The Department has research interests in most fields of Electrical and Electronic Engineering and while well qualified applicants from any appropriate field will be considered, preference will be given to those in the area of electronics, digital and/or analog for one position and in microwaves for the other.
Successful candidates would be invited to lecture in the undergraduate courses and carry out research in a field which is within the Department's interests.
December 1985

**The University of New England**
**LECTURESHIP IN PERFORMANCE**
**Department of Music**
The appointee will carry out undergraduate and postgraduate teaching, supervision of graduate and honours undergraduate studies and outside appropriate research and consultancy work.
The appointee will be expected to be, or qualify as, a practising performance specialist in one of the areas represented in the lecturers in musicology, composition and ethnomusicology as well as coordinating various ensembles which will be a major part of the appointee's teaching load. Ability to teach a second area such as music education, history or theory will be highly desirable. Both within the Department, which is an essential aspect of the performances will be those required to generate student enrolments and liaising with the wider community. Such professional activity leading to the appointee's teaching load will be required. A doctorate, or at least 20 minutes, a distinguished performer with the application
Intending applicants are urged to contact Professor Ellis (tel. 0067) 73 3077.
The appointment will be for the permanent and but the University reserves the right to make the appointment probationary where it considers this appropriate.
Other conditions include superannuation, assistance with travel and removal expenses and help in buying or building a house in Armidale.
Applications including the names and addresses of three referees and stating the position number 53b should be sent by the Staff Officer, University of New England,

Armidale N.S.W. 2351, Australia, prior to the closing date. Applicants should forward copies of this advertisement to their referees and ask them to send their reports direct to the Staff Officer, Mr B.G. Turner, marking their envelopes 'Private and Confidential' and quoting the position number. Before the closing date we aim to expedite the appointment process.
28 October 1985

**The University of Melbourne**
**RESEARCH FELLOW (GRADE 1) SCHOOL OF PHYSICS**
(Extendible tenure) (Readvertised).
Applications are invited for appointment as a Research Associate to work on an ARGS funded Physics programme – Theoretical Studies in Intermediate Energy Nuclear Physics.
The position is tenable for two years from date of appointment in 1986. Applicants should hold a Ph.D in theoretical nuclear physics or a related discipline.
A contribution towards the cost of travel to and relocation in Melbourne may be made to appointees from interstate or overseas.
30 November 1985

**LECTURER (CONTINUING) DEPARTMENT OF PSYCHOLOGY**
Applications are invited for a lectureship in Clinical Psychology. The position is tenurable and applicants should have a PhD in Psychology and a demonstrated record of research and publication. Preference may be given to an applicant with interest and experience in the area of Psychopathology. The Department of Psychology is involved in both undergraduate teaching and has links with Medical Centres in Clinical Psychology and Clinical Neuropsychology.
31 October 1985

**LECTURER (LIMITED TENURE) DEPARTMENT OF ARCHITECTURE AND BUILDING**
The appointee will be responsible for the development of architectural and building studies within the Department of Architecture and Building. Applicants should hold a higher degree in some relevant area. Established interest in environmental and/or energy-related aspects of buildings, environmental design and/or computer applications in building and/or research related to thermal performance of buildings and/or construction technology would be an advantage.
The successful applicant will be expected to take a leading role in the development of teaching and research in the architectural and building sciences. He/she will develop teaching and research at undergraduate level in the most rapidly developing areas of architectural and building science, and contribute to teaching and research in others.
4 November 1985

**The University of Western Australia Perth**
**LECTURER/SENIOR LECTURER DEPARTMENT OF MANAGEMENT**
(Tenured)
The successful applicant will be expected to have teaching and research competence in two or more fields in the Department's Marketing Area. The fields include Marketing Management, Marketing Research, Consumer Behaviour and Strategic Marketing.
Candidates should possess at least a Master's degree with a major in the Marketing area and a good record of publications. Candidates applying specifically at the Senior Lecturer level should possess a PhD.
The appointee will be expected to devote and participate in course development in both the HEcon and MBA programmes, supervise Masters and PhD students, and participate in research. Opportunity also exists to participate in the Department's Advanced Management Programme for executives and in the Centre's Applied Business Research which is affiliated with the Department.
For further information please contact Mr S G Hoddinott, Head of Department, Telephone No (09) 380 2648.
Benefits include superannuation, fares to Perth for appointee and dependents, removal allowance, study leave, long service leave and housing loan scheme.
24 October 1985

**LECTURER/SENIOR LECTURER DEPARTMENT OF COMPUTER SCIENCE**
(Tenured) (2 Positions)
Currently, the department has strengths in algorithms, logic programming, computer systems, concurrent programming, database, graphics and semantics, and is seeking to further strengthen some of these areas, particularly graphics, database and logic programming, and in other allied areas, especially expert systems and computational algebra.
The department is well supplied with computers with a Macintosh Laboratory of 40 machines (65,512K) a PC Laboratory of 10 colour graphics IBM PC machines networked to the main computer, a VAX-780, a Prime 2250 with Tektronix 4115B, and sundry supermicros, supported by 3 programmers and 2 engineers.
Candidates should have a higher degree in Computer Science or equivalent research experience.
It is intended to make an appointment to at least one of these posts at the senior level Preference will be given to those addressed in *Professor Jeff Rohl on (09) 380 2772.*
Benefits include superannuation, fares to Perth for appointee and dependents, removal allowance, study leave, long service leave and housing loan scheme
23 October 1985

**SENIOR TUTOR DEPARTMENT OF PSYCHOLOGY**
(Fixed-Term)
Applications are invited from suitably qualified persons for a Senior Tutorship for a period of three years beginning late 1986 or early 1987 (exact starting date to be agreed with the Department of Psychology). Applicants should possess a postgraduate degree in psychology. Teaching experience at tertiary institutions is highly desirable, and experience in research and/or clinical practice would be an advantage. The successful appointee will be expected to contribute to the M Psych. (Clinical) training programme, at both undergraduate courses and to engage in research.
Informal enquiries about the position can be made to the Director of the Clinical Unit, Dr Paul Morris (09) 380 2644.
Benefits include superannuation, fares to Perth for appointee and dependents and removal allowance.
27 October 1985
Applications in duplicate setting out full personal particulars, qualifications and relevant experience and the names and addresses of three referees should reach the Staffing Officer, University of Western Australia, Nedlands, Western Australia 6009 by the appropriate closing date. Candidates for appointment will be specified in any offer of appointment which may be made as a result of these advertisements. (72136)

**Macquarie University Sydney**
**SENIOR LECTURER/ LECTURER IN MASS COMMUNICATION**
(Fixed-Term)
**School of English and Linguistics**
His appointment is tenable for three years from date of appointment in 1986.
Applicants should have a PhD in theoretical nuclear physics or a related discipline.
A contribution towards the cost of travel to and relocation in Melbourne may be made to appointees from interstate or overseas.
30 November 1985

**TASMANIAN STATE INSTITUTE OF TECHNOLOGY**
**DIVISION OF ADMINISTRATIVE STUDIES**
**SCHOOL OF BUSINESS**
The Tasmanian State Institute of Technology is a multidisciplinary institute situated in Launceston with Study Centres in Burnie, Devonport and Hobart. The current student population is 1,878 EFTS.

**SENIOR LECTURER II/LECTURER I – ACCOUNTING (Ref. No. 12585)**
The School is seeking a person with experience in either professional practice or industrial component with teaching experience. A postgraduate qualification is required.
The successful applicant will be located on the North West coast at the Burnie Study Centre and will be required to teach across a broad range of accounting subjects. In addition the appointee will be required to liaise with the local community and in particular the accounting profession.
This position is tenurable.

**LECTURER I/LECTURER II – ACCOUNTING THEORY (Ref. No. 12685)**
The successful applicant will possess a postgraduate qualification. Practical experience would be an advantage. A thorough grounding in accounting theory, including contemporary issues is required. The position will be located in Launceston, but the successful applicant will need to be willing to teach in the Study Centres as required.
This position is available on a three year contract basis.
Salary: Senior Lecturer II – $A35,203 to $A37,695 per annum, *Lecturer I – $A30,708 to $$A34,467 per annum, Lecturer II –* $A26,238 to $A30,000 per annum.
An appointment in Tasmania gives access to very reasonable housing costs, excellent educational facilities for school children, together with a pleasant lifestyle.
All enquiries of an academic/professional nature should be directed to: Dr. D. Beck, Dean of Division (tel: (003) 26 0329).
*Applications, quoting the appropriate reference number,* and including the names and addresses of three referees should be forwarded to: The Acting Registrar, Tasmanian State Institute of Technology, P.O. Box 1214, Launceston, Tas. 7250, Australia. A copy of the application should also be submitted to the Association of Commonwealth Universities (Appts), 36 Gordon Square, London WC1H 0PF.
Closing date: 30 October 1985. (72136)

**Brunel**
THE UNIVERSITY OF WEST LONDON
**An opportunity to join a dynamic and stimulating working environment**
The department of Electrical Engineering and Electronics at Brunel has a strong undergraduate course, as well as a thriving postgraduate and research community. The work of this community has earned the department an international reputation. In recognition of the expanding activities of the department, the following positions in the department are being offered:

**Professorship** a person of scholarship, with proven ability to apply knowledge is sought. (Ref E1)
**Readership** in the field related to IC design. Sponsored by GEC Hirst Research Group Centre. (Ref E2)
**Lectureship** *in the Control Group.* (Ref E3)
**Lectureship** in Communications. (Ref E4)
**Research Fellows and Research Assistants** posts are available to VLSI specification, design, and architecture, as well as CAD Tools.

The main work of the department is in digital and microelectronics systems, but it has a broad spectrum of activities with strong support for group work. The department has many contacts with industry and opportunities exist for interesting and challenging consultancies.
For further information please contact the Personnel Secretary, *Brunel University, Uxbridge, Middlesex, UB8 3PH.* Informal inquiries will be welcomed by the Head of Department on Uxbridge (0895) 37188, Ext 351. (72123)

**LOUGHBOROUGH UNIVERSITY OF TECHNOLOGY**
**MIDLAND BANK PROFESSOR OF BANKING STUDIES**
*Applications are invited for the post* of Midland Bank Professor of Banking Studies in the Department of Management Studies. The appointee will be required to develop and co-ordinate teaching and research in both domestic and international bank policy and management, *and in the law and practice* of banking; liaise closely with specialists in money and banking in the Department of Economics; and develop and maintain effective relationships with banks and financial institutions. The appointee will participate actively in the University Banking Centre, a new postgraduate and post experience teaching and research centre established jointly with the Department of Economics.
Applicants should possess appropriate and relevant research experience and preferably should have senior banking experience. The salary will be within the professorial range (current minimum £18,705 and average £22,085, but subject to review from 1 *April 1986*).
Application form and further particulars may be obtained from the Registrar, University of Technology, Loughborough. Informal enquiries may be made to Professor G. Gregory, Head of Department of Management Studies on 0509 263171, ext. 480. Closing date 31 October 1985.
*Loughborough* *Leicestershire*

**The University of Leeds**
Office of the Registrar
**SENIOR ASSISTANT REGISTRAR**
(Academic Planning)
Applications are invited from graduates for an appointment as Senior Assistant Registrar in the Office of the Registrar. The person appointed will, in the first instance, be responsible for co-ordinating the work of the academic planning section of the Office. Applications from candidates with wide experience of University administration would be particularly welcome.
The appointment will be on the administrative grade III scale (£14,135 – £17,705) under review, according to age, qualifications and experience.
Further particulars may be obtained from The Registrar, The University, Leeds LS2 9JT, quoting reference number 1378/4. Closing date for applications 18 October 1985. (51910) H1

**University of Oxford**
**Lady Margaret Hall**
**TUTORIAL FELLOWSHIP IN MODERN HISTORY**
Applications are invited for a Tutorial Fellowship in Modern History, to be held in conjunction with a University Lectureship (C.U.F.), from 1 October 1986. The appointment will be in early modern history, and applicants will be prepared to teach some part of both English and European history between 1400 and 1800.
Further particulars may be obtained from the Principal's Secretary, Lady Margaret Hall, Oxford OX2 6QA, with whom applications completed by applicants are required by 25 October 1985. (51912) H1

## Universities continued

### UNIVERSITY OF THE WEST INDIES
### MONA, JAMAICA

Applications are invited for the following posts.

**LECTURER/ASSISTANT LECTURER IN GEOLOGY.**

Primary consideration will be given to persons with postgraduate qualifications in more than one of the following: Palaeontology, Petroleum Geology and Stratigraphy. Duties to be assumed as soon as possible

**LECTURER/ASSISTANT LECTURER IN ZOOLOGY**

Successful applicant will be expected to develop a strong programme of research in his/her own specialty and to participate in general teaching in Zoology.

**LECTURER/ASSISTANT LECTURER IN ASIAN HISTORY**

Applicants also qualified to teach European History will have an advantage. Duties to be assumed by October 1, 1985, or as soon as possible thereafter

**LECTURER/ASSISTANT LECTURERS IN LIBRARY STUDIES (TWO POSTS)**

Successful applicants will be required to teach at first degree and postgraduate diploma levels. Duties to be assumed as soon as possible.

**LECTURER/ASSISTANT LECTURER IN AUDIO-VISUAL PRODUCTION, CARIBBEAN INSTITUTE OF MASS COMMUNICATION**

Applicants must have at least a Masters degree with preferred expertise in Management Support Communication. Successful applicant will be responsible for teaching DEC techniques utilising synchro-slides, other small media and VTR (including VTR editing) to diploma and degree students. He/she will also be responsible for teaching either Communication Analysis and Planning, or The Micro-computer as a Communication Tool, or Communication Research Methods at diploma and degree levels. Duties to be assumed as soon as possible.

Salary Scales (under review): Lecturer J$ 23,688 × 768 – 28,296 (Bar) × 825 – 33,246, Assistant Lecturer J$ 20,379 × 717 – 21,813.

CONDITIONS OF SERVICE (under review): Up to five full economy class passages plus baggage allowance up to US$900 on appointment and normal termination. Special allowance up to US$300 for shipment of academic books and teaching/research equipment on appointment. UWI contribution of equivalent of 10% of salary to Superannuation Scheme. Unfurnished accommodation at 10% of pensionable salary (or furnished at 12½% in Trinidad) or housing allowance or 20% of pensionable salary. Subsidized Health Service. Annual Book Allowance. Annual Study and Travel Grant for self, spouse and three children. Transportation allowance to persons who own and operate a motor vehicle.

Detailed applications (three copies) giving full particulars of qualifications and experience, date of birth, marital status, and the names and addresses of three referees should be sent as soon as possible to the Campus Registrar, UWI, Mona, Kingston 7, Jamaica. Applicants in the U.K. should also send one copy to the Assistant Secretary General (Appointments), Association of Commonwealth Universities, 36 Gordon Square, London WC1H 0PF. Further details obtainable from either source. (72118)

### UNIVERSITY OF QUEENSLAND
### CHAIR OF COMPUTATIONAL MATHEMATICS

The University is seeking a mathematician with an outstanding research record and with considerable experience in the practical applications of mathematics. Specialisation is expected in at least one major area of applied computational mathematics such as numerical analysis, operations research and mathematical programming.

The Professor will lead the computational mathematics group within the department and will be required to engage in teaching of undergraduates and the promotion of research and postgraduate studies. Consultation with industry is strongly encouraged.

Salary: $A54,948 per annum.

Closing date: 31st December, 1985. Ref. 36785.

### LECTURER IN PUBLIC ADMINISTRATION
**Fixed term 2 years**
**GOVERNMENT**

The successful applicant is expected to hold a higher degree and to have demonstrated a commitment to teaching and research in public administration.

Salary per annum: $A26,236–$A34,467.

Appointment January or February 1986. Closing date: 23rd October, 1985.

Please supply names and addresses of three referees. Ref. 36485.

The University provides prescribed travelling and removal expenses, superannuation, housing assistance and special studies programs above positions.

Additional information and application forms are available from the Secretary-General, Association of Commonwealth Universities, 36 Gordon Square, London WC1H 0PF.

*The University of Queensland is an Equal Opportunity Employer.* (72112)

### Imperial College of Science and Technology
University of London
Department of Social and Economic Studies

**LECTURESHIP IN ECONOMICS**

The Department invites applications for a Lectureship in Economics from candidates wishing to work in a multi-disciplinary group in a scientific and technological university.

The Department would particularly welcome applications from scholars with interests in industrial economics, technology transfer or quantitative methods, but is also interested in applications from scholars in other areas.

Applications should reach Professor Z.A. Silberston, Department of Social and Economic Studies, 53 Prince's Gate, Exhibition Road, London SW7 2PG, not later than November 16th 1985. Further particulars are available from Professor Silberston's Secretary (01-589 5111, Ext. 7609). (51870) H1

### Goldsmiths' College
University of London
School of Education

**LECTURER/ SENIOR LECTURER IN EDUCATION (PRIMARY)**

Applications are invited from suitably qualified teachers with recent teaching experience in the junior school age range (7 – 11 years) to join a team of staff teaching a new B.Ed. Honours degree. Applicants will be expected to teach Education Theory & Practice courses and to offer particular strength in one area of the curriculum, preferably Art or Language.

The salary will be on the scale £8,586 × 12 increments to £14,166 per annum inclusive – salary review pending.

Write for further details to the Senior Assistant Registrar (Personnel), University of London Goldsmiths' College, New Cross, London SE14 6NW. Closing date for the receipt of completed applications 11th October 1985.

The College is an Equal Opportunities Employer. (51917) H2



### UNIVERSITY OF OTAGO
### DUNEDIN, NEW ZEALAND

Applications are invited for the following positions;

**ASSISTANT LECTURERS IN HISTORY**
**REFERENCE A85/42**

Two Assistant Lecturer positions in the History Department. Applicants should possess at least a good honours degree and postgraduate research experience or a completed PhD. Preference will be given to applicants with qualifications in either of the following fields: (1) American History. (2) Pacific history (Maori, Polynesian, Melanesian). Consideration may also be given to candidates with strong qualifications in other fields.

**ASSISTANT LECTURER IN PHILOSOPHY**
**REFERENCE A85/43**

Applications from candidates in all areas of philosophy will be considered, although preference will be given to candidates with a special interest in moral philosophy.

**LECTURER OR ASSISTANT LECTURER IN POLITICAL STUDIES**
**REFERENCE A85/44**

Applicants must be competent in quantitative methods and be prepared to lecture in another area as well, preferably policy studies or comparative politics. A Lecturer gains tenure, assuming satisfactory performance, after three years; an Assistant Lecturer teaches a reduced load and would be given time to develop an introductory methods course. The successful applicant must be willing to supervise research into New Zealand political behaviour. The starting date is flexible, although a date later than June 1986 is undesirable.

Specific information on the Department may be obtained from Professor J.R. Flynn, Department of Political Studies.

**LECTURER OR ASSISTANT LECTURER IN STATISTICS**
**REFERENCE A85/50**

One position in the Department of Mathematics and Statistics. Applicants should be prepared to take up the position on or after 1 February 1986. The University will provide direct, excursion-rate fares and a contribution towards removal expenses.

**Salaries:**

**Assistant Lecturer: $NZ 20,000 – $NZ 24,000 per annum**
**Lecturer: $NZ 28,000 – $NZ 35,000 per annum**

**Intending applicants are invited to write for further information, available from the Secretary General, Association of Commonwealth Universities (Appts), 36 Gordon Square, London WC1H 0PF, or from the Registrar of the University, PO Box 56, Dunedin, New Zealand. Applications quoting the appropriate reference number close in London and New Zealand on 31 October 1985.** (72117)

### University of Ulster
## RESEARCH OFFICER
**Centre for Applied Health Studies**
**(One year appointment at Coleraine) Ref: C85/212**

To participate, as part of a multi-disciplinary research team, in a study of ward management, entailing the evaluation of an educational package for staff nurses and sisters. Ideally the appointee would assume responsibility for the day-to-day work on this project, and two others being undertaken by the Centre for Applied Health Studies.

Applicants should be qualified nurses, preferably with a degree or higher degree and should have experience at management level in nursing, together with a good working knowledge of research methods.

Salary will be determined by age, qualifications and experience within the Research and Analogous Staff IA Scale £7,520 – £12,150 per annum (under review).

Further details are available from the Staffing Office, University of Ulster at Coleraine, Cromore Road, Coleraine, Co Londonderry BT52 1SA (Telephone Coleraine 4141, Ext 2228) to whom applications, including a full curriculum vitae and the names and addresses of two referees, should be sent not later than 11 October 1985. This post is open to both male and female applicants. (72133)

### UNIVERSITY OF SALFORD
Department of Civil Engineering

## RESEARCH FELLOW
**(Two Posts)**
## PROGRAMMER/ KNOWLEDGE ENGINEERS

**To work on an Alvey Directorate 'Community Club' Project Awarded to the RICS**

Post 1. Senior Research Fellow £18,070 (under review) quote ref. C/255/THES.

Post 2. Research Fellow £12,150 (under review) quote ref. C/256/THES.

Posts are available for eighteen months commencing as soon as possible.

Further details and application forms from The Registrar, University of Salford, Salford M5 4WT (telephone 061-736 5843 extension 218) quoting *reference as appropriate.*

**Completed applications should be returned by 18 October 1985.**

### University of Oxford
The Queen's College
**JUNIOR RESEARCH FELLOWSHIP IN MODERN HISTORY**

The College proposes to elect a man or woman to a Junior Research Fellowship in Modern History tenable for three years from 1 October 1986. Candidates should be working on any period after 55 BC in British History and after 285 AD elsewhere. The closing date for applications is 15 November 1985.

Further particulars may be obtained from the College Secretary, The Queen's College, Oxford OX1 4AW. (51880) H1

### UNIVERSITY OF STIRLING
### INSTITUTE FOR RETAIL STUDIES

The Institute for Retail Studies which is based in the Department of Business Studies invites applications from suitably qualified candidates for three new posts.

**SENIOR LECTURER/LECTURER IN RETAILING**

The appointee will be expected to organise and contribute to short courses in retail management and participate in the research and teaching activities of the Institute. The post is for 5 years in the first instance. Salary will be on the scale £14,136 to £17,706 with USS (Senior Lecturer) or £7,520 to £14,925 with USS (Lecturer).

**RESEARCH FELLOW**

The appointee will be expected to work on a number of research programmes currently underway within the Institute for Retail Studies. The post is for 1 year in the first instance. Salary will be on the scale £6,800 to £8,900 with USS.

**SIR HUGH FRASER VISITING PROFESSOR**

The appointee will contribute to courses given to undergraduates, graduates, mid career executives and participate in the research underway in the Institute. The post is for approximately six months starting in January 1986 and carries a total stipend of £6,000.

Further particulars are available from the University Secretary, University of Stirling, Stirling FK9 4LA: Tel: 0786 73171, to whom applications should be sent by 18 October 1985. (72139)

### THE UNIVERSITY OF LEEDS
DEPARTMENT OF GERMAN LANGUAGE AND LITERATURE

## CHAIR OF GERMAN

Applications are invited for the Chair of German in the Department of German Language and Literature, which will become vacant upon the retirement of Professor K.G. Knight on 30 September, 1986. The salary will be not less than the minimum of the professorial range (£18,070 a year – under review).

Further particulars may be obtained from the Registrar, the University, Leeds LS2 9JT, quoting reference 6/4. Applications (two copies), giving details of age, qualifications and experience, and naming three referees, should reach the Registrar, no later than 22 November 1985. Applicants from overseas may apply in the first instance by cable, naming three referees, preferably in the United Kingdom. (72110)

### The University of Manchester
**TEMPORARY LECTURER IN EDUCATION (TEO)**

Applications are invited for the post of Temporary Lecturer in Education (TEO) with special reference to the training of Saudi Arabian Teachers of English. The post is tenable for one year (but with reasonable possibility of extension for further periods of one year) from October 1st, 1985 or as soon as possible thereafter. Candidates should have good postgraduate EFL qualifications and substantial overseas English-teaching experience, including experience in training EFL teachers.

Salary within range £7,520 – £10,720 p.a. (under review).

Applications, including names and addresses of referees, should be sent immediately to Professor J. D. Turner, Department of Education, The University, Manchester M13 9PL (tel. 061 273 3333 extn. 2478) from whom further particulars may be obtained. Interviews will be held on 14th October. Quote ref: 516/85 THES.

### Imperial College of Science and Technology
(University of London)
**COLLEGE LIBRARIAN**

Required in September 1986. Substantial previous experience, preferably in the operation of scientific and technological collections, and possession of a University degree and professional qualifications essential.

Salary not less than £19,035 per annum (under review) including London Allowance.

Further particulars and application forms from Administrative Secretary, Imperial College, London SW7 2AZ (01-589 5111, Ext. 3301).

Closing date 18 October 1985. (51775) H1

### University of Newcastle upon Tyne
**CHAIR OF SOCIAL POLICY**

Applications are invited for the Chair of Social Policy which has become vacant due to the appointment of the previous holder to the Chair of Social Work at the University of Leicester. The Chair was established by the University in 1974 as the Chair of Social Work Studies and is the only established Chair in the Department of Social Policy. It is expected that the person appointed will have a particular interest in Social Policy but this could include applications from candidates specialising in social work training who also have broad academic interests. A social work qualification would be useful, but is not essential. The person appointed should be able to maintain good relations with local authorities and other external bodies. The appointment will carry with it the Headship of the Department of Social Policy for an initial period of five years.

Salary will be in the professorial range.

Further particulars may be obtained from the Deputy Registrar, The University, 6 Kensington Terrace, Newcastle upon Tyne NE1 7RU with whom applications (12 copies), giving the names of three referees, should be lodged not later than 11 October 1985. Applicants from outside the UK may submit one copy only. (51891) H1

### Southampton THE UNIVERSITY
**DEPARTMENT OF MATHEMATICS**

Applications are invited for the post of Lecturer in Operational Research in the Department of Mathematics.

Candidates should have a good background in Mathematics and an interest in computing. The research interests of the O.R. Group include combinational Optimisation, Network Theory, Stochastic Control Theory and the use of O.R. Models in the Treatment and Detection of Disease.

Duties will include teaching on the O.R. M.Sc. course and undergraduate courses. A Pure Mathematician with an interest in Theoretical O.R. could well be suitable for the post.

Salary scale: £7620 × £470 to £14,925 per annum (plus 4% interim award). The initial salary will depend on qualifications and experience.

Further particulars may be obtained from Mr. D.W. Powell, Staffing Department, University of Southampton, Southampton SO9 5NH, to whom applications (7 copies from U.K. applicants) should be sent not later than 28 October, 1985, quoting reference 1711/A. (72128)

### University of Oxford
The Queen's College
**BROWNE RESEARCH FELLOWSHIP**

The College proposes to elect a man or woman to a Browne Research Fellowship in Animal or Plant Sciences (but excluding Medical sciences) tenable for three years from 1 October 1986. The closing date for applications is 15 November 1985.

Further particulars may be obtained from the College Secretary, The Queen's College, Oxford OX1 4AW.





## Universities continued

### University of Hong Kong
**LECTURER IN URBAN STUDIES AND URBAN PLANNING**

Applications are invited for a Lectureship in Urban Studies and Urban Planning in the Centre of Urban Studies and Urban Planning. Applicants should have a Master's degree in Urban Planning or equivalent, and a Ph.D., professional membership of a recognized urban planning institution in either Britain, Australia, New Zealand or Canada; teaching and research experience and specialization in planning practice and law, transport planning and modelling.

Annual salary (superannuable) is on an 11-point scale: HK$160,980 approx. £15,480 – 25,980 approx. equivalent as at sterling, September 10, 1985). Starting salary will depend on qualifications and experience. At current rates, salaries tax will not exceed 17% of gross income. Housing benefits at a rental of 7½% of salary, children's education allowance, leave, and medical benefits are provided.

Further particulars and application forms may be obtained from the Secretary General, Association of Commonwealth Universities (Appts), 36 Gordon Square, London WC1H 0PF, or from the Appointments Unit, Secretary's Office, University of Hong Kong, Hong Kong. Closing 25 October 1985. (51869) H1

### University of Southampton
Human Morphology

Applications are invited for the post of

**SENIOR LECTURER OR LECTURER IN HUMAN MORPHOLOGY**

from graduates in either Medicine or Science. Experience in teaching Human Anatomy to undergraduate medical students and in research in any field of the anatomical sciences is essential for either post.

The appointment will be made at either Senior Lecturer level (£14,135 to £17,706) or Lecturer level (£7,520 to £14,925) depending on the experience, publications and experience. Pending a settlement on the 1985 award a 4% increase will be applied to these scales.

Further particulars may be obtained from A.J. Small, Staffing Officer, Southampton University, Highfield, Southampton SO9 5NH to whom applications (7 copies) should be sent via their referees, addresses and telephone numbers if known, not later than 26th October 1985. Please quote ref. no. A18/85/MVH1101. (51787) H1

### Imperial College of Science and Technology
**LECTURESHIP IN ANALYST/ PROGRAMMER**

Applications are invited for a temporary post as

**ANALYST/ PROGRAMMER**

to prepare educational software in BASIC for undergraduate courses in Civil Engineering. The appointment will be initially for 12 months.

Applicants should possess either a 1st degree in Civil Engineering or similar discipline and have a particular interest in microcomputing, or be able to demonstrate expertise in educational software.

Salary in scale £6,600 – £7,980 (under review) plus £1,397 London Allowance.

Further details from and applications (with CV and names of two referees to: Dr G.W. Owens, Department of Civil Engineering, Imperial College, London SW7 2BU. (51871) H1

### University of Oxford
St Hilda's College
**APPOINTMENT OF TREASURER**

Applications are invited from men and women for the full-time post of Treasurer to this women's college from 1st January (or as soon after as possible) to be responsible to the Governing Body for financial planning and control. Experience of financial management and administration is essential.

Full particulars should be obtained from the Principal, St Hilda's College, Oxford OX4 1DY, to whom applications (8 copies) should be submitted by 11th October. (51903) H1

### Holidays and Accommodation


BRISCOLL HOUSES HOTEL, 200 metres promenade, £40 per week, special terms. Apply 17a Kingsway, Llandudno LL30 2PG. Tel: (0492) 76161. (51816) H1

PLEASE MENTION THE T.H.E.S. WHEN REPLYING TO ADVERTISEMENTS


### Durham University Business School
'Graduate into Enterprise' Scheme

**INTER-REGIONAL COORDINATOR**

The Graduate into Enterprise scheme aims to provide a means for every graduate in the North to have access to awareness, induction, self-employment, work experience in small enterprise, and graduate enterprise programmes. It is supported by a consortium of northern educational institutions and by a number of large companies, charities and the Manpower Services Commission.

The coordinator will have central responsibility for marketing this programme dealing with a variety of institutions, educational and business. He/she should have sound experience and knowledge of management development programmes in small business and ample entrepreneurial drive.

The post will be for a period of three years on the Lecturer's scale – £7,520 – £14,925 per annum, under review), plus superannuation. Secondment terms may be negotiable in appropriate cases.

Applications (three copies) together with the names of three referees should be sent not later than 16th October 1985 to the Registrar and Secretary, Old Shire Hall, Durham DH1 3HP, from whom further particulars may be obtained. (51885) H1

### Goldsmiths' College
University of London
School of Education

**LECTURER/ SENIOR LECTURER IN EDUCATION (PRIMARY) NURSERY/ FIRST SCHOOL**

Applications are invited from suitably qualified teachers with recent teaching experience in nursery/infant/first schools. Applicants will be expected to offer a particular strength in one area of the curriculum, preferably in an area of Environmental Studies or Science. The lecturer appointed will contribute particularly to a new B.Ed. Honours degree course.

The salary will be on the scale £8,586 × 12 increments to £14,166 per annum inclusive – salary review pending.

Write for further details to the Senior Assistant Registrar (Personnel), University of London Goldsmiths' College, New Cross, London SE14 6NW. Closing date for the receipt of completed applications 11th October 1985.

The College is an Equal Opportunities Employer. (51918) H1

### Imperial College of Science and Technology

Applications are invited for a temporary post as

**ANALYST/ PROGRAMMER**

to prepare educational software in BASIC for undergraduate courses in Civil Engineering. The appointment will be initially for 12 months.

Applicants should possess either a 1st degree in Civil Engineering or similar discipline and have a particular interest in microcomputing, or be able to demonstrate expertise in educational software.

Salary in scale £6,600 – £7,980 (under review) plus £1,397 London Allowance.

Further details from and applications (with CV and names of two referees to: Dr G.W. Owens, Department of Civil Engineering, Imperial College, London SW7 2BU. (51871) H1

### University of Botswana
**PROFESSOR IN DEPARTMENT OF EDUCATIONAL FOUNDATIONS**

Applications are invited for the above post. Qualifications: at least a Master's degree in Education, preferably in Educational Psychology/Guidance and Counselling; Ph.D. preferred. The successful candidate will have a wide range of experience in Teacher Education, in-service training and research operations and should be in a position to develop new programmes and promote the research activities of the Department/Faculty. Relevant teaching and administrative experience at the university level and a developing country will be an added advantage.

Salary: P19,162 – 22,140 per annum. Fringe benefits for expatriates: 30% gratuity addition of basic salary and gratuity at 25% of basic on any gratuity contract. Addition of successful completion of a two-year contract.

Applications should be addressed to the Assistant Registrar (Academic Staff), University of Botswana, Private Bag 0022, Gaborone, Botswana, to reach it by 31 October 1985. Candidates in the UK should forward one copy of their applications to the Secretary General, Association of Commonwealth Universities (Appts), 36 Gordon Square, London WC1H 0PF. (51983) H1


PLEASE MENTION THE T.H.E.S. WHEN REPLYING TO ADVERTISEMENTS


### University of Oxford
New College
**JUNIOR RESEARCH FELLOWSHIPS**

The College invites applications for the Junior Research Fellowships described below.

Application forms and further particulars are obtainable from the Tuition Secretary; applications must reach him not later than 25 November 1985. Each candidate is asked to name three referees and to request them to write directly to the Tuition Secretary. Interviews which should reach him not later than 3 December 1985. It is intended that interviews for short-listed candidates should be held at the end of January 1986.

**W.W. SPOONER JUNIOR RESEARCH FELLOWSHIP**

This Junior Research Fellowship in Engineering is tenable for three years from 1 October 1985.

**THE ASTOR JUNIOR RESEARCH FELLOWSHIP**

This Junior Research Fellowship, on the occasion, is offered in one of the following subjects: Law, Music, Oriental Studies. The Fellowship is tenable for three years from 1 October 1986. (51885) H2


FOR DETAILS OF ADVERTISING IN THE T.H.E.S. PLEASE RING SUE PEPLOW 01-253 3000 EXTN. 226


## Fellowships

## STUDENTSHIPS awarded by the GERMAN HISTORICAL INSTITUTE LONDON

The German Historical Institute will award a number of studentships to enable British post-graduate students to pursue historical research in Germany for a doctoral degree. Applicants must have completed at least one year's post-graduate research and be studying German history or Anglo-German relations. A knowledge of the German language is also required. Other paid appointments or scholarships cannot be held during the tenure of the studentship.

The studentship, amounting to DM 1,300 per month, will begin on 1. January 1986 for a maximum period of one year. Candidates should send in their application, together with a detailed outline of their project and their supervisor's recommendation to the Director, German Historical Institute, 17 Bloomsbury Square, London WC1A 2LP to arrive not later than 30 October 1986. (72137)

### THE INCORPORATED FROEBEL EDUCATIONAL INSTITUTE
Templeton, 118 Priory Lane, London SW15 5JW

## RESEARCH FELLOWSHIPS

The Froebel Council proposes to elect one or more NON STIPENDIARY RESEARCH FELLOWS in the field of Education for a period of one, two or three terms during the academic year 1986/7. These Fellowships will carry an entitlement to full board and single living accommodation during term time. There are no restrictions as to age or sex.

**Requests for further details may be made up to the end of October 1985 to the Secretary at the above address.** (72116)

### The Radcliffe Trust
**FELLOWSHIP IN MUSICOLOGY**

Applications are invited from suitably qualified scholars in the field of musicology (which may be interpreted in a wide sense) for a Fellowship tenable during the academic year 1986-1987.

1. The Fellowship is intended to provide for a scholar of established reputation an opportunity to devote a year to research, untrammelled by teaching or administrative duties. It is envisaged with the particular needs in mind of scholars who enjoy an entitlement to paid study leave.

2. Though no restrictions are placed upon the nature and scope of the research programme submitted, applicants will be looking for a scholarly project that could be expected to result in a major publication, whether a book or an edition, rather than a collection of articles. A piece of work heavily dependent upon the availability of an unlikely-to-be-realised period of research time may be preferred to one which would merely be expedited by this.

3. On the assumption that most scholars eligible for a Radcliffe Fellowship are likely to be employed in a University or similar institution, the Trustees' practice is to negotiate with the employing body for the Fellow's release from duties, on normal salary for a full academic year. In his or her place a temporary teacher/supervisor is paid for by the Trust. Candidates whose professional or employment is not in an educational institution should indicate whether a comparable scheme, i.e. of supporting their salaries for a year, would be acceptable to their employers.

4. Candidates are asked to submit to the undersigned, to be received not later than 31st December 1985, a brief curriculum vitae, including a complete list of publications, and an outline of the proposed research they would undertake, where this would be taken, any special facilities it might require, and the form its published results would take. They should also state what, if any, entitlement to study leave is open to them, and the use they have made of it.

5. Applications will be assessed by a panel of three University Professors of Music.

Ivor Guest, Secretary, The Radcliffe Trust, 9 Lincoln's Inn Fields, London WC2A 3BP. (51867) H2

### University of Oxford
St. Anne's College
**FULFORD RESEARCH FELLOWSHIP**

Applications are invited for the Fulford Junior Research Fellowship, tenable from Michaelmas Term 1986 for one year in the first instance but renewable for a second year. The Fellowship is offered for research in any of the Arts subjects which can be studied in Oxford and is open to men and women graduates in their second or subsequent year of research.

Further particulars may be obtained from the College Secretary, St. Anne's College, Oxford OX2 6HS. (51879) H1

### Institute of Historical Research
University of London
**SCHOLARSHIP FOR HUGUENOT RESEARCH**

A £900 scholarship is offered to a student working for a higher degree on a French, Dutch or Flemish Protestant subject.

Conditions of award obtainable from Institute of Historical Research, Senate House, London WC1E 7HU. (51879) H35

### University of Melbourne
**POSTGRADUATE SCHOLARSHIPS 1986 AWARDS**

The University offers a number of scholarships each year to graduates in undertaking the degree of Master or the Doctor of Philosophy degree at the University of Melbourne. Australian nationals may apply.

The scholarship stipend is $A6,500 per annum for up to four years (Ph.D.) and two years (Master's). Establishment and dependent allowances are payable.

Applications for 1986 selection close with the Registrar at the University on 31 October 1985.

Application forms and additional information may be obtained from the University of Melbourne, Parkville, Victoria 3052, Australia, or the Association of Commonwealth Universities (Appts), 36 Gordon Square, London WC1H 0PF. (51859) H35

### University of Oxford
**FULFORD RESEARCH FELLOWSHIP**

Applications are invited for the Fulford Junior Research Fellowship, tenable from Michaelmas Term 1986 for one year in the first instance but renewable for a second year. The Fellowship is offered for research in any of the Arts subjects which can be studied in Oxford and is open to men and women graduates in their second or subsequent year of research.

Further particulars may be obtained from the College Secretary, St. Anne's College, Oxford OX2 6HS. (51879) H1

## Scholarships

## Polytechnics

### NEWCASTLE UPON TYNE POLYTECHNIC
Faculty of Construction and Applied Science
School of Chemical and Life Sciences
**Re-advertisement**

## PRINCIPAL LECTURER IN ORGANIC CHEMISTRY
**Ref. A36/85**
**Burnham F.E.: P.L. £13,095 – £14,580 (bar) £16,467 p.a. (pay award pending).**

Candidates should possess a good honours degree in Chemistry, and have appropriate research and/or industrial experience. A higher degree would be highly desirable.

This is a Key post in the School of Chemical and Life Sciences, and the person appointed will be expected to assume a senior management role in addition to acting as subject leader and developing research/consultancy. In view of the holiday period, the closing date for this post has been extended until 4th October 1985.

Faculty of Business and Management School of Marketing and Distribution

## LECTURER II OR SENIOR LECTURER
**(Required for 1 January 1986)**
**Ref: A46/85**
**Burnham F.E.: Senior Lecturer £11,175 – £13,128 (bar) £14,061 p.a. Lecturer II £7,548 – £12,099 p.a. (Pay Award Pending).**

Applications are invited for the above post, to teach marketing subjects on a range of courses ranging from the B.T.E.C. Higher to opportunities in degree work, post-graduate work and professional courses.

A capacity in the specialisms of Advertising, International Marketing and/or Marketing research will be a particular recommendation.

Applicants should have a first or higher degree in the Marketing area.

Relevant business experience/a teaching qualification or experience will also be advantageous.

Closing date 4th October 1985.

For further details and application forms please call our 24 hour telephone answering service (0632 323126) or write enclosing a foolscap s.a.e. to Miss Elsie Thorpe, Senior Clerk (Recruitment), Newcastle upon Tyne Polytechnic, Ellison Building, Ellison Place, Newcastle upon Tyne NE1 8ST, to whom completed forms should be returned quoting the ref. (72143)

### RGIT

ROBERT GORDON'S INSTITUTE OF TECHNOLOGY
SCHOOL OF HOTEL AND INSTITUTIONAL ADMINISTRATION

**SENIOR LECTURER IN HOTEL AND CATERING MANAGEMENT STUDIES/ ADMINISTRATION**

With appropriate academic and professional qualifications, and industrial as well as advanced level teaching experiences, for duties as Senior Lecturer in Hotel and Catering Management Studies for Degree and higher Diploma Courses in Hotel, Catering and Institutional Management and to act as Industrial Tutor.

**Salary scale: £12,777 – £16,104 (Under review)**

Assistance with removal expenses.

Details from: The Personnel Department, Robert Gordon's Institute of Technology Schoolhill, Aberdeen AB9 1FR Tel: (0224 633611) (72139)

### SUNDERLAND POLYTECHNIC
Faculty of Humanities
Department of Business Management
**Salary: LII/SL £7548-£13128 (under review)**

## LECTURER II/ SENIOR LECTURER IN ACCOUNTING
**(Temporary Post)**

Applicants for the post should be qualified to teach Managerial Accounting and/or Financial Accounting to B/TEC HND and BA Business Studies students as well as making a contribution to other courses. Vacancy has occurred because of the secondment of a member of staff to a Local District Health Authority for one year.

Post will be available from 1 October 1985 until 30 June 1986. (9 months).

An application form and further particulars may be obtained from Personnel Officer, Sunderland Polytechnic, Langham Tower, Ryhope Road, Sunderland, SR2 7EE or tel (0783) 78231 Ext. 11.

Closing date: 10 October 1985. (72134)

## Polytechnics continued

**LANCASHIRE POLYTECHNIC AT PRESTON**

Faculty of Communication and Cultural Studies

**Head of School/Professor of Historical and Critical Studies** (Ref. AA/294)
Burnham Group V

**Head of School/Professor of Media Studies** (Ref. AA/295)
Burnham Group V

Faculty of Business and Management

School of Organisation Studies

**Principal Lecturer** (Ref. AA/296)

Faculty of Social Studies

**Head of School/Professor of Community Studies** (Ref. AA/297)
Burnham Group VI

**Head of School/Professor of Health Studies** (Ref. AA/298)
Burnham Group VI

Faculty of Technology

School of Computing

**Principal Lecturer** (Ref. AA/299)

**Lecturer II** (Ref. AA/300)

**Lecturer II**
**one year fixed term contract** (Ref. AA/301)

**Research Assistant**
**three year fixed term contract** (Ref. AA/302)

**Software Systems Engineer – NJC Grade Scale 6** (Ref. NT/85/86/56)

School of Electrical and Electronic Engineering

**Principal Lecturer** (Ref. AA/303)

**Lecturer II/Senior Lecturer (two posts)** (Ref. AA/304)

School of Mechanical and Production Engineering

**Reader/Principal Lecturer in Manufacturing Systems Engineering** (Ref. AA/305)

**Lecturer II/Senior Lecturer in Engineering Dynamics** (Ref. AA/306)

**Head of Business and Industrial Centre** Burnham Group V (Ref. AA/307)

Limited term contract for 2 years in the first instance, renewable by agreement for a further 2 years.
Salary Scales (under review)
Burnham Group VI £17,397 to £19,170
Burnham Group V £16,098 to £17,877
Principal Lecturer £13,095 to £14,580 (Bar) to £16,467.
Senior Lecturer £11,175 to £13,128 (Bar) to £14,061
Lecturer II £7,548 to £12,099
Research Assistant £6,405 to £7,176
N.J.C. Scale 6 £6,978 to £9,591

*Application forms and further details quoting the appropriate reference number are available from the Personnel Office, Lancashire Polytechnic, Preston, PR1 2TQ. Tel: (0772) 262027. Closing Date: 11th October 1985.*

LANCASHIRE POLYTECHNIC AT PRESTON

## THES diary

Once again, The *THES* has produced a pocket-sized academic year diary. In an easily read week-to-a-page format, the diary also contains 14 pages of information and addresses, including full university, polytechnic and Scottish central institution listings, together with research councils, trade unions, and government, local authority and employers' organisations at home and abroad. Copies are available, price £2 inclusive, direct from Linda Bartlett, The Times Supplements, Priory House, St John's Lane, London EC1M 4BX. Cheques should be made payable to "Times Newspapers".

**DEPARTMENT OF ENGINEERING**

## Reader in Electronic Engineering

SALARY SCALE: £13,095 – £14,580 (bar) – £16,467 per annum

Bristol and its environment is fast becoming Britain's most significant area of high technology growth with many international names investing heavily in the region. At the centre lies Bristol Polytechnic which, during the next few years, expects to make major contributions towards industrial developments in the area. Applicants are invited for this important post within the Department of Engineering and candidates with a proven industrial or academic track record in any branch of Electronic Engineering are encouraged to apply. A new Engineering building is under construction and will be opened in October 1985 providing excellent facilities for research and consultancy.

From a social and environment viewpoint, Bristol is located in one of the most sought after areas in which to live and work; in easy reach of many attractive rural areas and yet within an hour's journey of London by rail.

For further details and an application from, to be returned by 17 October 1985, please contact the Personnel Office, Bristol Polytechnic, Coldharbour Lane, Frenchay, Bristol or ring Bristol 656261, Ext 216 or 217.

**Please quote Reference Number L/37 in all communications**
Avon County Council is an Equal Opportunities Employer (72110)

Bristol Polytechnic

A major teaching and research institution of Higher Education.

**ASSISTANT ACADEMIC REGISTRAR**

Applications are sought for the above post. Responsibilities include oversight of the work of the Admissions and Examinations Offices, organisation and administration of Registration procedures, clerking a number of senior College committees and assisting with the preparation of College publications, statistical returns etc. as appropriate. The successful candidate would deputise for the Academic Registrar in the latter's absence.

The successful candidate is likely to have experience in a higher education institution in some or all of the areas.

Salary Scale: APV/SO1 £10,638 – £13,328 per annum

Application forms from the PERSONNEL OFFICER, GLASGOW COLLEGE OF TECHNOLOGY, COWCADDENS ROAD, GLASGOW G4 0BA (tel: 041 332 7090) to be returned within 14 days of the appearance of this advertisement. (72142)

GLASGOW COLLEGE of TECHNOLOGY
A Scottish Central Institution

**NAPIER COLLEGE**
**A Scottish Central Institution**

## ASSISTANT SECRETARY

**Salary: £13,617 – £15,123 (under review)**

A vacancy exists for an Assistant Secretary, to lead the General Services Division within the College Administration, and to assist with the servicing of the Governing Body and its Committees. Applicants should have an honours degree, preferably within the legal field, or combined with an appropriate professional qualification, and previous experience and committee work.

Application forms and further particulars available from:
**Administrative Officer (Personnel)**
**Napier College, 219 Clinton Road, EDINBURGH EH14 1DJ**
**Tel (031) 447 7070 × 4274**
CLOSING DATE: 11 October 1985 (72116)

**North Staffordshire Polytechnic**
Department of Mathematics

**RESEARCH ASSISTANT**

£5,181 - £5,910 per annum
(Pay award pending)

Applications for the above post are invited from graduates with a good honours degree in Mathematics or a related discipline. The research will extend work undertaken in the Department for ten years, in the field of variational theory.

The successful applicant will be required to register with the CNAA for M.Phil./Ph.d.

The post is available for two years with the possibility of an extension for a further year.

Application forms and further particulars are obtainable from the Personnel Section, North Staffordshire Polytechnic, College Road, Stoke on Trent, Staffordshire ST4 2DE. Tel: Stoke on Trent (0782) 45341 Ext. 311.

**South Bank Polytechnic**
Department of Modern Languages
School of Languages and Area Studies

**LII/SL IN SPANISH**

Applications are invited for the above post to teach Spanish Language Primarily on the B.A. in modern languages with international studies, B.A. in business studies and BEC HND in business studies.

Applicants should be specialised in one or more of the follow: Spanish Politics/Economics/Business. Candidates should have native or near native command of Spanish and a research interest in the social sciences.

Salary range: LII £8,886 - £13,137 p.a. LI £7,548 - £15,099 p.a. Inclusive of London Allowance. Scales are currently under review. Appointment from 1st January 1986.

Further details and application forms available from the Personnel Department, South Bank Polytechnic, Borough Road, London SE1 0AA. Tel: 01-928 8989, Ext: 2335/2361. Please quote ref: ML67. Closing date: 15th October 1985. An Equal Opportunities Employer

**PAISLEY COLLEGE**
A Scottish Central Institution

**SENIOR LECTURER/ LECTURER IN STATISTICS**

Paisley College is a major degree awarding institution funded by the Scottish Education Department with 3,000 full-time students in vocationally orientated degree and honours degree courses.

Applications are invited for this vacancy in THE DEPARTMENT OF MATHEMATICS AND STATISTICS from candidates who have a minimum of a good honours degree together with appropriate research consultancy experience.

The successful applicant will contribute to the teaching and development of courses in statistics at honours degree and post experience levels and will be expected to undertake research/consultancy work.

If the appointment is made at Senior Lecturer level the successful candidate will be responsible for joint leadership of the Statistics Group in the Department.

Salary Scales – Lecturer 'A' £8,868-£13,716
Senior Lecturer 'A' £12,777-£16,104 (review pending)

Application forms and further particulars may be obtained from THE PERSONNEL OFFICER, PAISLEY COLLEGE OF TECHNOLOGY, HIGH STREET, PAISLEY, PA1 2BE (Telephone No 041-887 1241, Ext 235). (72081)

**Bristol Polytechnic**
Department of Engineering

**LECTURER II/ SENIOR LECTURER IN ELECTRONIC ENGINEERING**

Applications are invited for a lectureship vacancy within the Department of Engineering. Applicants should be good honours graduates in Electronic Engineering or an allied subject with a minimum of three years research or industrial experience. The Department is particularly interested in candidates who can offer experience in digital systems, VLSI, computer engineering or software engineering.

The Department of Engineering is housed in a brand new building is to be opened in October 1985 providing excellent facilities for research and consultancy.

Salary Scale: LII £7,548 - £11,175 (bar) - £12,099 per annum. SL £11,175 - £15,198 (bar) - £14,061 per annum.

The appointment will be made on the appropriate scale according to relevant previous service/experience. (Progression from the LII scale to the SL scale is in accordance with the provision of the Burnham Further Education Report)

For further details and an application form, to be returned by 17 October 1985, please contact the Personnel Office, Bristol Polytechnic, Coldharbour Lane, Frenchay, Bristol, or ring Bristol 656261, Ext. 216 or 217.

Please quote Reference Number L/07 in all communications.

Avon County Council is an Equal Opportunities Employer. (51882) HS

**The Polytechnic of North London**

**FACULTY REGISTRAR SCIENCE & TECHNOLOGY**

Applications are invited from those with experience of education and higher administration for this senior post in PNL's largest faculty. The Polytechnic has recently decided to extend substantially the developed powers and responsibilities of its five faculties and the Registrar will play a key role in the interpretation and implementation of this decision.

Salary: £8,938 - £12,331 + London Allowance £1,494.

Application form and further information are obtainable from The Personnel Officer, The Polytechnic of North London, Holloway Road, London N7. Tel: 607 2789.

Closing date for the receipt of applications is 14 days from the appearance of this advertisement.

The Polytechnic of North London is an Equal Opportunities Employer. (51916) HS

**Trent Polytechnic**
Department of Computing

**LECTURER GRADE II/ SENIOR LECTURER IN COMPUTING**

(£7,926 - £14,763 p.a. subject to ratification)

Applications are invited for a lectureship in Computing. Expertise in one or more of the following areas: Architecture, Computer Graphics, Expert Systems, Formal Methods, Software, Recent postgraduates or those with industrial experience are particularly encouraged to apply. Previous re-advertisement, re-applicants need not apply.

Further details and application forms of application are available from the Staff Officer, Trent Polytechnic, NG1 4BU. Closing Date: 15th October 1985. An Equal Opportunities Employer



## Polytechnics continued

**Bristol Polytechnic**
Department of Engineering

**PRINCIPAL LECTURER/ LECTURER II/ SENIOR LECTURER IN MANUFACTURE**

Applications are invited for the above post to support the development of new degrees, sub-degree work and industrial short courses within the general area of CAE. The successful candidate will be expected to undertake research work appropriate to the support of advanced level courses.

Applicants should have an industrial/research background in at least one of the following areas:

Advanced Manufacturing Processes, Robotics, F.M.S., System Simulation, C.I.M.

Candidates should have a good honours degree in a relevant branch of engineering or computer science, preferably with a higher degree.

The Department of Engineering is housed in a brand new building which is to be opened in October 1985 providing excellent facilities for teaching research and consultancy.

Salary Scale: Principal Lecturer £13,095 - £14,580 (bar) - £16,467 per annum; LII £154 - £11,175 (bar) - £10,098 per annum; SL £11,175 - £13,128 (bar) - £14,061 per annum.

The appointment will be made on the appropriate scale according to relevant previous service/experience. (Progression from the LII scale to the SL scale is in accordance with the provision of the Burnham Further Education Report).

For further details and an application form, to be returned by 17 October 1985, please contact the Personnel Office, Bristol Polytechnic, Coldharbour Lane, Frenchay, Bristol, or ring Bristol 656261, Ext. 216 or 217.

Please quote Reference number L/08 in all communications.

Avon County Council is an Equal Opportunities Employer. (51883) HS

**Thames Polytechnic Incorporating Avery Hill College**
School of Architecture and Landscape

**ARCHITECT SENIOR LECTURER**

Following Roger Stonebraus's appointment to a Chair at the University of Manchester, this Polytechnic seeks to appoint an architect with excellent design ability and wide industrial interests, to teach in studios and to lecture. Applicants must hold appropriate academic and professional qualifications, have at least five years experience in architectural practice and a serious concern for architectural education. A qualification in an associated discipline (eg architectural history/theory, landscape or conservation/rehabilitation) would be an advantage.

The School has honours courses in architecture and landscape architecture and is fully recognised by the RIBA and I.L. It is situated on a fine residential campus.

Salary scale: £11,439 - £13,392 (bar) - £14,325 inclusive.

Further particulars and application form from the Staffing Officer, Thames Polytechnic, Wellington Street, London SE18 6PF, to be returned by 15 October 1985.

Thames Polytechnic is an equal opportunities employer. (51925) HS

## Adult Education

**Workers' Educational Association Nottingham**

The East Midland District of the Workers' Educational Association invites applications for the post of

**DISTRICT SECRETARY**

to work from its Nottingham headquarters and take up the duties on 1 February 1986.

Present salary scale (under review) £13,374 - £15,402, with maximum rising to £15,765 from August 1986.

Applicants should preferably have some experience of adult education.

Further details may be obtained from the District Secretary, WEA East Midland District, 16 Shakespeare Street, Nottingham NG1 4GF.

The closing date for receipt of applications is 14 October 1985. (51858)

**Colleges of Further Education**

**Inner London Education Authority**
**St. Martin's School of Art**
107 Charing Cross Road, London WC2H 0DU
Tel: 01-437 0611

Applications are invited for the posts described below to take effect as soon as possible.

**1. PRINCIPAL LECTURER IN FASHION**

The post is that of Course Director to the four year B.A. (Hons) Fashion (sandwich) Course.

Candidates are expected to be well qualified academically probably with a degree or equivalent in Fashion Design, to have considerable experience in both the Fashion industry and education and to possess proven administrative ability. Re-advertisement.

Salary: Assessed with the range £13,095 - £14,580 (Bar) £16,467 plus £1,038 Inner London Allowance.

**2. LECTURER II FASHION**

The post is that of year tutor and tutor of pattern cutting and clothing production.

Candidates are expected to be well qualified professionally, have experience in the fashion industry and education and possess proven administrative ability.

Salary is assessed within the range of £7,548 - £12,099 plus £1,038 Inner London Allowance.

Both of these post are suitable for Job Share. Applications for job share appointments will only be considered if submitted on a paired basis.

Further details of the posts and application forms are obtainable from the Senior Administrative Officer at the School to whom applications must be returned by 18 October 1985.

ILEA is an equal opportunities employer. (51877) ... H7

**Gloucestershire College of Arts and Technology**
Department of Computing, Electronic and Mathematical Studies

**SENIOR LECTURER IN COMPUTING**

£11,175 - £14,061 (award pending)

A vacancy exists for a suitably qualified person able to offer a specialism in one of the following areas: Expert Systems, Database, Graphics, Systems Audit or Systems Programming. Candidates should have recent industrial or commercial experience. Teaching experience is not essential.

Further details and application forms available from Administrative Officer (Reinfinn) GlosCAT, Oxstalls Lane, Gloucester GL2 9HW. SAE please.

Closing date: 2 weeks from appearance of advertisement. (51921) H7

## Librarians

**City of Birmingham Polytechnic**
An equal opportunities employer

Library
Perry Barr

**ASSISTANT LIBRARIAN (CIRCULATION) SCALE 6**

Applications are invited from chartered librarians for the post of Assistant Librarian (Circulation) responsible for the organisation and development of circulation and support services in the Reader Services Section of the William Kenrick Library at Perry Barr. An interest in computerised circulation systems would be an advantage.

The ability to lead a large team of library assistants and to communicate effectively with colleagues at all levels is essential.

Salary Scale 6 £8,979 - £9,591 p.a.

Application forms, returnable by 14th October 1985 and further details from: Personnel Branch, City of Birmingham Polytechnic, Blackthorn House, Perry Barr, Birmingham B42 2SU. Tel: 021-356 9163, Ext. 215/216.

Applications from employees for the GLC or MCC's will be given equal consideration with relevant experience.

## Colleges and Institutes of Higher Education

HARROW COLLEGE OF HIGHER EDUCATION

**COMPUTING POSTS**

The College intends to develop and strengthen the teaching of computing and its applications. Applications are invited for the following posts:-

**Ref. C1 PRINCIPAL LECTURER:**
**College Computer Manager (College Post)**
**Salary Scale £13,095 – £16,467 + £1,038 London Weighting per annum**
**Ref. C2**
**SENIOR LECTURER:**
**Business Applications (Faculty of Business & Management)**
**Salary Scale £11,175 – £14,061 + £1,038 London Weighting per annum**
**Ref. C3**
**LECTURER II:**
**Real time Applications (Faculty of Science & Technology)**
**Ref. C4**
**LECTURER II:**
**Data-processing (Faculty of Science & Technology)**
**Salary Scale £7,548 – £12,099 + £1,038 London Weighting per annum**
**Ref. C5**
**LECTURER I:**
**Programming & Applications (Faculty of Science & Technology)**
**Salary Scale £5,910 – £10,512 + £1,038 London Weighting per annum**

The College will be interested to receive applications for fractional posts at L11 and L1 levels. With the exception of the L1 post an appropriate level of practical experience is necessary.

Please quote the reference numbers of the posts in which you are interested.

Applications from employees of the GLC or MCCS with relevant experience will be welcome.

Application forms are available together withfurther details from the Principal Harrow College of Higher Education Northwick Park Harrow Middlesex HA1 3TP, telephone 01 864 5422 extension 231 or 232 and should be returned within 14 days of the appearance of this avertisement.

Harrow is an Equal Opportunities Employer. (72144)

**Nene College Northampton**

– Faculty of Art and Design
Director: Dr E Ogilvie

Applications are invited from established and experienced teachers of design for the post of

**LECTURER L2/SL in DESIGN**

to assist in the teaching of Art and Design within the BA/BSc Combined Studies degree, validated by the University of Leicester.

The appointed person will be expected to lead the development of the core studies in design, serving all 3-dimensional and 3-dimensional practice within the degree courses and make a special contribution in drawing. Applicants should be interested in teaching as a process and be able to make a considerable contribution to courses in initial and in-service teacher training.

Salary scale: Lecturer 2/Senior Lecturer £7,548-£14,061, subject to Burnham FE Salaries Document rules of progression (assessment point dependent on qualifications and experience.

The post will be available from 1st January 1986. Further particulars and application forms are available from: BP Cubitt, Dean of Faculty of Art and Design, Nene College, St. George's Avenue, Northampton, NN2 6JD (0604 714101) to whom they should be returned within 14 days of this advertisement (SAE please). (72131)

**Nene College Northampton**

– Faculty of Art and Design
Director: Dr E Ogilvie
Re-advertisement
Applications are invited for the post of

**SENIOR LECTURER**

Salary scale £11,175–£13,128 (bar) currently under review

in THREE DIMENSIONAL DESIGN WITH SPECIFIC RESPONSIBILITY FOR THE BTEC ORDINARY NATIONAL DIPLOMA COURSE IN DESIGN CRAFTS

The Faculty of Art and Design is a Grade V department with a wide programme of advanced and non advanced studies of which BTEC courses occupy a key part.

The appointed person should be both an experienced teacher of three dimensional design and a practising designer craftsman or an associated field. Although the present course is a traditional one, it is expected that the successful applicant has a clear view of the traditional crafts, it is expected that the successful applicant would be prepared to develop the work of the department appropriate to the future needs of the Faculty and with an awareness of developing technologies.

The post will be available from 1st January 1986. Further particulars and application forms are available from: BP Cubitt, Dean of Faculty of Art and Design, Nene College, St. George's Avenue, Northampton NN2 6JD (0604 714101) to whom they should be returned within 14 days of the advertisement (SAE please). (72130)

Nene College Northampton

Applications are invited for the following posts within the Faculty of Education and Social Science commencing 1st January 1986

1. **Lecturer in Education – Early Years** (Lecturer II/Senior Lecturer)
2. **Lecturer in Education – Psychology of Education** (Lecturer II/Senior Lecturer)

(Re-advertisements salary scales; Lecturer II £7,548 x 10 increments – £12,099 Senior Lecturer £11,175 x 6 increments – £14,061 under review)

**For further details and application forms send SAE to Dr J Alexander, Dean, Faculty of Education and Social Science, Nene College, Moulton Park, Northampton NN2 7AL. Indicating clearly the post of interest. Tel: 0604 715000**

Completed application forms should be returned by 11 October 1985. (72141)

Department of Accountancy and Business

## Economics/Business Studies

Lecturer II/Senior Lecturer required for January 1986 to teach Economics/Business Studies subjects at BTEC Higher National Diploma and Certificate level. An interest or ability in Business Environment, Business Games, and Computer Applications would be desirable.

Candidates should have a degree. Teaching experience would be an advantage.

**Salary: £7,812-£14,325 inclusive (under review)**

Please send sae to the Vice Principal, Slough College of Higher Education, Wellington Street, Slough SL1 1YG. Closing date 14 days.

**Slough College**

**S. Martin's College of Higher Education**
Lancaster

**LECTURER II SENIOR LECTURER IN ART & DESIGN**
(Ceramics/3D Design)

Applications are invited from graduates with substantial teaching experience in schools for the post of Lecturer II/Senior Lecturer in Art & Design (Ceramics/3D Design) commencing 1 January (or 1 April) 1986. The post involves teaching on B.Ed. (Primary), B.A. P.G.C.E. and in-service courses in Art and Design. Candidates should have experience and expertise within the specific area of ceramics and should also be able to contribute to the broader context of Art and Design education.

Further particulars and application forms may be obtained from The Principal, S. Martin's College, Lancaster LA1 3JD. Completed application forms should be returned as soon as possible. Re

**Durham County Council**
**New College Durham**

Principal: Leonard G. Bewsher, Acad. Dip.Ed. (Lond.), B.Sc. (Econ.), M.A., F.R.S.A.

Faculty of In-Service Education, Information and Computing Studies

School of Post Experience Studies

**LECTURER II IN SPECIAL EDUCATIONAL NEEDS**

Applications are invited from suitably qualified and experienced teachers for this post in the Faculty of In-Service Education, Communication and Computing Studies from January, 1986. The successful candidate will contribute to a range of in-service courses for teachers.

Further particulars and application forms, returnable by Friday, 11th October, 1985 may be obtained from The Principal, New College Durham, Framwellgate Moor Centre, Durham DH1 5ES, on receipt of a stamped addressed foolscap envelope. (51893) H6

## Colleges and Institutes of Higher Education continued

**HUMBERSIDE COLLEGE of Higher Education**

### FACULTY OF ARTS

**Applications are invited for the following senior post:**

### FINE ART HEAD OF SCHOOL

**Grade 5**

**£16,098-£17,877 p.a. (under review)**

The School of Fine Art provides both full and part-time CNAA Honours Degree programmes, together with Foundation Studies. Active co-operation with other departments at the College is encouraged, particularly in relation to Design, Social Studies and Teacher Education. There is a close association with the Humberside community.

**Application forms and further details from: The Personnel Office, Humberside College of Higher Education, Cottingham Road, Hull HU6 7RT. Tel: (0482)446506**

**Closing date: 10th October 1985.**

**HUMBERSIDE COLLEGE of Higher Education**

### FACULTY OF BUSINESS

**Applications are invited for the following senior post:**

### INFORMATION & COMPUTING STUDIES HEAD OF SCHOOL

**Grade 6**

**£17,397-£19,170 p.a. (under review)**

The School has a range of innovative programmes, including CNAA Honours degrees in Secretarial Studies and Office Systems Management and in Business Information Systems together with Higher Diploma/Certificate courses in Industrial Data Processing and in Computer Studies. There is the opportunity for a key contribution to be made throughout the Faculty of Business both in curriculum development and in the enhancement of research and consultancy activities.

**Application forms and further details from: The Personnel Office, Humberside College of Higher Education, Cottingham Road, Hull HU6 7RT. Tel: (0482) 446506**

**Closing date: 10th October 1985.**

**King Alfred's College Winchester**

### PRINCIPAL LECTURER IN PROFESSIONAL STUDIES LECTURER/SENIOR LECTURER IN MATHEMATICS IN EDUCATION

Applications are sought from well qualified graduates for the following posts, to take up the 1st January 1986, in the fields of mathematics in-service teacher education:

### PRINCIPAL LECTURER Chairman B.Ed. (Primary) Development team and Course Director Designate

The successful candidate will have good experience in Teacher Education and/or Primary Education and Research. The appointment is for a senior post, initially to chair a Development Team for a new B.Ed. (Primary) and on its success to become Course Director, at which level the level of the post will be reviewed.

### TUTOR IN MATHEMATICS IN EDUCATION

The post is for a tutor who will teach on the B.Ed. Special Subject Course and Mathematics curriculum courses. Good qualifications in Mathematics and sound Primary School experience or research related to Mathematics in the Primary Curriculum, are sought.

Salary Principal Lecturer: £16,095-£16,461

Lecturer II/Senior Lecturer: £7,548-£14,061 (both under review)

Further particulars may be obtained from The Principal, King Alfred's College, Winchester, SO22 4NR, to whom applications should be sent by 11 October 1985. H19

**S. Martin's College of Higher Education**

Lancaster

### PRINCIPAL LECTURER AND HEAD OF MATHEMATICS

Applications are invited from well qualified graduates for the post of Principal Lecturer and Head of Mathematics for appointment from 1st January for 1st April 1986. The post involves leading a team of colleagues engaged in B.Ed., B.A., P.G.C.E. and In-service courses. Experience in both school and Higher Education is desirable.

Further particulars and application forms may be obtained from The Principal, S. Martin's College, Lancaster LA1 3JD. Completed application forms should be returned as soon as possible. H8

## Personal

**LOANS TO SALARIED WOMEN** from £50 granted same day. Salaried Women's Postal Loans Ltd., 17a Kensington St., W1. Ext written quote apply 01-734 3795. (Trade) H31

**IMMEDIATE ADVANCES £100 to £30,000.** Unsecured Loans repaid over 1 to 10 years. Written quotations sent by return. Regional Trust Ltd., 91 Dover Street, Piccadilly, London W1A 3EJ. Phone 01-491 2834 or 499 2416 (24hrs).

**100% MORTGAGES 3½ X** income. Also available, 95% Loans £1,000 — £30,000 in 10 days. Written quotes available. Ring now 01-445 5451. (4000518000000

**PLEASE MENTION THE T.H.E.S. WHEN REPLYING TO ADVERTISEMENTS**

## Research and Studentships

**NORTH EAST BIOTECHNOLOGY CENTRE AT TEESSIDE POLYTECHNIC**

### LEA RESEARCH ASSISTANT PROTEIN PRECIPITATION

The following research post is available to the North East Biotechnology Centre in the Chemical Engineering Department. The post is tenable for 3 years only.

The Research Assistant will investigate factors controling the particle size of protein and nucleic precipitates, as an aid to their subsequent separation from the liquid phase. Applicants should have a good honours degree in Biochemistry, Chemical Engineering or a related discipline.

Salary (which includes payment for up to 6 hours per week teaching assignment) £5910 – £6657 per annum.

Application form and further particulars may be obtained from the Personnel Section, Teesside Polytechnic, Borough Road, Middlesbrough, Cleveland, TS1 3BA, Telephone: (0642) 218121 ext 41114.

An Equal Opportunity Employer.

**CLOSING DATE FOR APPLICATIONS: 18 October 1985** (72129)

**OXFORD POLYTECHNIC**

### RESEARCH ASSISTANT IN STRUCTURES

Applications are invited for a post of Research Assistant in the above Department to carry out work into the post-buckling behaviour of cold formed steel sections

The successful applicant will be expected to apply for registration for a higher degree.

Applicants should possess, or expect to possess, a good honours degree in civil or structural engineering. The appointment, which will be for one year in the first instance with the possibility of renewal for a further two years, will be on the Researcher A Scale (£5,181 – £7,176 under review); the person appointed will be expected to teach up to a maximum of 6 hours per week.

For further particulars and application forms contact Dr M.H.R. Godley, Department of Civil Engineering, Building and Cartography, Oxford Polytechnic, Headington, Oxford, OX3 0BP (Tel: Oxford 64777).

An Equal Opportunities Employer (72126)

**University College of Swansea**

### SENIOR RESEARCH ASSISTANT

Applications are invited for the vacancy of Senior Research Assistant in the Department of Mechanical Engineering to work with Professor W.D. Morris on a project financed by the Ministry of Defence and Rolls Royce Ltd., on an investigation of heat transfer and flow resistance in the cooling passage of gas turbine rotor blades. Applicants should possess a good honours degree in mechanical engineering or related discipline and ideally possess a Ph.d. degree in the general area of Thermo-Fluid Mechanics. Experience in Laser Doppler Anemometry would be attractive.

The appointment, which will be for up to three years from the soonest date that can be arranged, will be on a commencing salary up to £6,960 per annum plus USS/USDPS benefits.

Further particulars and application forms (2 copies) may be obtained from the Personnel Office, University College of Swansea, Singleton Park, Swansea SA2 8PP, to which office they should be returned by October 16, 1985. (72/855) H12

**The University of Lancaster**

### RESEARCH ASSOCIATE

A Research Associate is required for 1 year to assist in the statistical analysis of large sets of company data. Undergraduate or postgraduate studies which have included mathematics or applied statistics would be an advantage. Previous research experience with financial data is not necessary.

Salary on the Research 1B scale (£6,600 - £8,930 under review) or up to point 4 on Research 1A scale (£7,580 - £8,930 under review).

Further particulars and application form available from the Establishment Office (quoting reference Ls/6/5), University House, Bailrigg, Lancaster LA1 4YW where applications (five copies) naming three referees should be sent to arrive not later than 11 October 1985. (51915) H12

**The University of Lancaster**

Department of Sociology

Applications are invited for the post of

### RESEARCH OFFICER

for a period of 6 months from 1 January 1986 to work on an ESRC funded research project on basic needs and social planning in Kenya, under the direction of Dr. Dharam Ghai. Applicants should possess a postgraduate qualification in sociology or social anthropology, have an interest in development issues and some computing experience.

Salary up to the £8,450 point of Research 1B scale (£6,600 - £8,930 under review).

Further particulars and application form available from the Establishment Office (quoting reference Ls/35/5), University House, Bailrigg, Lancaster LA1 4YW where applications (five copies) naming three referees should be sent to arrive not later than 1 October 1985. (51916) H12

**University of Liverpool**

Department of Political Theory and Institutions

### UNIVERSITY RESEARCH ASSISTANT UNIVERSITY SENIOR RESEARCH ASSISTANT

The Department has been awarded a grant by the U.G.C. under its 'Computers in Teaching' initiative to develop a package of teaching materials from the series of academic studies of electoral behaviour known as the British Election Studies. Applications are invited for the post of University Research Assistant/University Senior Research Assistant on this project whose duties will be to prepare a set of easily used data to students. He/she will work in collaboration with Mr. John Curtice, and with colleagues of the University of Oxford. The ideal applicant will probably have a good honours degree in a social science subject, two or at least two years' research experience, and substantial experience of analysing social scientific data using one or more statistical packages. Informal enquiries may be made to Mr. Curtice on 051-709 6022, Ext. 2743.

Salary in the range £6,600-£8,920 *per annum (under review)*. The appointment is funded for one year and will commence as soon as possible.

Applications, together with the names of three referees should be received not later than 11 October 1985 by the Registrar, The University, P.O. Box 147, Liverpool L69 3BX, from whom further particulars may be obtained. Quote ref: RV/197/THES. (51888) H12

**University of Liverpool**

Department of Continuing Education

D.E.S. Innovative Project

### RESEARCH ASSISTANT (ONE YEAR)

A suitably qualified person is required to assist in the creation of distance learning materials, particularly on video, with an emphasis on material relevant to Merseyside and, in particular, to community education in the area. The person appointed will work with academic staff in the Department and some teaching in a relevant subject might be expected. Experience in community education or in communications will be an advantage.

Salary will be within the range £6,600 - £8,930 per annum (under review).

Applications, together with the names of three referees, should be received not later than 4th October 1985 by The Registrar, The University, P.O. Box 147, Liverpool L69 3BX, from whom further particulars, may be obtained.

Quote ref. RV/195/THES. (51887) H12

**University of Southampton**

Department of Psychiatry

### RESEARCH ASSISTANT

(2/3 time, salary range 1B) to carry out home interviews with breast cancer patients in Southampton/Portsmouth area.

Details available from Dr. J. Hughes, University Department of Psychiatry, Royal South Hants Hospital, Graham Road, Southampton. Please quote ref. no. A18/857. Southampton (0703) 777474 (51874) H12

## General Vacancies

### EDUCATIONAL DIRECTOR

TO RUN A SMALL UNIT CONCERNED TO ADVANCE ACADEMIC RELATIONS BETWEEN ISRAEL AND THE U.K. GOOD ACADEMIC RECORD AND KNOWLEDGE OF ISRAEL/U.K. UNIVERSITIES AN ADVANTAGE.

**WRITE BOX No. THES 1006 Priory House, St John's Lane, EC1M 4BX** (72127)

## Colleges and Departments of Art

**Kent County Council Maidstone College of Art**

### HEAD OF DEPARTMENT OF GRAPHIC DESIGN

*Burnham Grade IV*

Applications are invited for appointment to this important post with the Head of Graphic Design will be responsible for the management of the department and, in conjunction with its Course Leader, for the product of the CNAA, B.A. (Hons) course in Graphic Design.

S/he will join the Head of Department of Fine Art and Foundation Studies and other senior members of staff in individual responsibility for overall management and development of the policies and implementation of its policies.

Application forms and further particulars of the post are available from the Chief Administrative Officer, Maidstone College of Art, Oakwood Road, Oakwood Park, Oakwood Road, Maidstone, Kent ME16 8AG. Tel: (0622) 57265, Ext. 28.

Re-advertisement. Previous short-listed candidates need not necessarily be reconsidered. (51901) H10

**Birmingham City Council**

An equal opportunities employer

Education Department

**Bournville College of Art Linden Road, Birmingham B30 1JX**

Required for 1 January 1986:-

### HEAD OF DEPARTMENT FINE ART

Salary £13,593 - £14,115

The post will initially be at Grade II but due to the development of BTEC Diploma Courses will rise to Grade III in September 1986. The Department runs BTEC General Art and Design and Post-Degree Foundation Courses. There are several part-time and vocational classes in non-vocational painting and drawing. Also, there is a growing Access to HND Technician Course at the College.

Department of Visual Communication

### LECTURER II IN GRAPHIC DESIGN

Salary £7,548 - £13,099

Department of Design

### LECTURER I IN FASHION

Salary £5,910 - £10,512

The above posts are concerned with teaching on full-time BTEC Courses.

Further particulars and application forms obtainable from the College Administration Office. Tel: 021-471 0181 ext. 2 (72125) H1

## Colleges and Departments of Art

**University of Liverpool**

Department of Electrical Engineering and Electronics

Applications are invited from suitably qualified Physicists or Engineers for two posts of

### SENIOR RESEARCH ASSISTANT

on a project concerning the development of novel

### OPTO-ELECTRONIC INSTRUMENTATION FOR POWER SWITCHGEAR MONITORING

The successful applicants will be expected to liaise closely with collaborating UK industries. Experimental aptitude is regarded as more essential than experience of either optical fibre instrumentation or power switchgear. The appointment would provide an ideal opportunity to gain relevant experience in a new and growing technological field with definite career prospects.

The posts are tenable for up to two years at an initial salary within the range £7,330 - £8,920 per annum (under review).

Application forms and further particulars may be obtained from The Registrar, The University, P.O. Box 147, *Liverpool L69 3BX, by whom completed forms should be* received not later than 17th October, 1985.

Quote Ref. RV/194/THES. (51876) H12

**University of Newcastle upon Tyne**

Department of Electrical and Electronic Engineering

### RESEARCH ASSOCIATE

Applications are invited for a Research Associate post to support the adaptive control activity currently under way, on a major EEC-funded research contract investigating novel techniques of tactile sensing for robots in manufacture. The successful candidate would be expected to participate fully with partners in West Germany and Greece, and implement state of the art adaptive control algorithms on the contracts UK robotic site based at Newcastle.

Starting salary will be up to £9,860 per annum on the *Range 1A scale (£7,580 -* £13,150 p.a.) according to age, qualifications and experience. Consideration may be given to payment of some relocation expenses from the contract if appropriate. The post is tenable for 2 years and the person appointed must be able to start work by 1st November 1985.

Applications with full curriculum vitae and the names and addresses of three referees, should be lodged with Dr C. Allen, Department of Electrical and Electronic Engineering, The University, Newcastle upon Tyne NE1 7RU, *not later than 10th* October 1985. (51884) H13

**UMIST**

Department of Management

### RESEARCH ASSOCIATE

As part of the ESRC 'Corporation Accountability' Initiative, applications are invited for the above post on the project 'Accounting Regulation as Corporatist Control'.

Candidates with a background in sociology, political science, economics or accounting are encouraged to apply. A knowledge of accounting practices is not required: the project is concerned with the role of accounting. Please contact David Cooper (061-236 3311), Gary Lewis or Tony Puxty (both on 0742 782585), Sam Wilmott (031-556 3011) for informal discussion. The post will involve periods in the United States, Sweden and Germany.

The appointment is for two years from November 1985, or as soon as possible thereafter.

Commencing salary may be up to £10,749 p.a. (includes interim award), in the first year.

Further details may be obtained from Professor David Cooper, Department of Management Sciences, UMIST, P.O. Box 88, Manchester M60 1QD, to whom applications (4 copies) including a full c.v., telephone number and names of two referees should be sent by 11 October 1985. Please quote reference MS/7/60. (51905) H12

**University College London**

### RESEARCH TEAM ESRC FUNDED SEEKS ASSISTANT

Initially for one year (renewable), with knowledge of Word Processing and interest in Computers to help produce volumes for publication. Although the post involves *considerable* routine work, opportunities are available for developing the New Technology aspects of the Project. Good honours degree or suitable background.

Contact: Dr F. Rosen, Bentham Project, University College, London, Gower Street, London WC1E 6BT. (51924) H1

## Administration

"Applications from employees of the GLC or MCC's with relevant experience will be welcome."

### PRINCIPAL ADMINISTRATIVE OFFICER

**£13,542–£14,682**

Are you an experienced Administrator who likes working with people and has the managerial skills to take charge of a large Schools Division? If so this challenging and rewarding position could be your next career move.

As head of Schools Administration you will be expected to make a major contribution to policy and practices in dealing with the administration of primary, secondary and special schools, admissions, governing bodies, assistance to pupils and parents, recoupment and transport.

To be successful in this post you will need to demonstrate the ability to exercise initiative in planning and decision making; have had considerable administrative experience, preferably in the education environment, and have gained an appropriate qualification.

Enfield is an attractive residential area on the northern edge of London and lies partly in the Green Belt. Temporary Housing (up to 51 weeks); 100% removal expenses (£600 max); generous relocation costs and lodging allowances where appointee needs to move.

**Application forms and further information available from Education Establishment Section, PO Box 56, Civic Centre, Silver Street, Enfield, Middlesex, EN1 3XQ. Telephone 01-366 9366. Closing date first post 14-10-85. Please quote Reference OGD/497/192.**

London Borough of Enfield

An Equal Opportunity Employer

## Secondary Education

### THE KING'S SCHOOL CANTERBURY

The Governors wish to appoint a

### HEAD

from September 1986, following the appointment of the present Headmaster, Canon Peter Pilkington, to be High Master of St. Paul's School.

*Full details may be obtained from:*

**Richard H.B. Sturt, M.A., Clerk to the Governors, 68 Castle Street, Canterbury CT1 2QB Tel: 0304 206208** (72128)

## Independent Colleges

Applications are invited for the post of

### PRINCIPAL of SPURGEON'S COLLEGE

The College trains candidates for the Baptist Ministry and offers C.N.A.A. validated B.A. and B.A. Honours degrees in Theology.

The successful applicant will be required to exercise spiritual leadership in the developing life of the College.

Applications close 8th November 1985.

Further details from the Secretary, Spurgeon's College, 189 South Norwood Hill London, SE25 6DJ.

Et Teneo Et Teneor

(72039)





## Overseas continued

### Director of Technical Education and Vocational Training

**Lesotho**

The Director will be responsible for the Permanent Secretary, Ministry of Education for implementing Government policies and objectives in relation to technical and vocational training and education.

As well as taking charge of the Department's administration, the Director will act as Secretary to the Technical and Vocational Training Board, co-ordinate training activities in training institutions, oversee the application of technical studies in secondary schools and maintain contact with employees of skilled labour and others concerned with technical and vocational training.

Applicants should be British Citizens, aged 40-55 and educated to degree level, with an industrial background in technical vocational training; at least five years experience in the administration of such training at national level (preferably overseas); a knowledge of pre- and in-service industrial skill training programmes and experience of the application of technical studies within a secondary school system.

Salary (UK taxable) is in the range £17,928 to £20,426 pa, including an element in lieu of superannuation. A variable tax free Foreign Service Allowance, currently *in the range £859 to £3,130 pa is also payable.*

The post is wholly financed by the British Government under Britain's programme of Aid to the developing countries. Other benefits normally include paid leave, free family passages, children's education allowances and medical attention.

For full details and application form, please apply, quoting ref. AH310/CB/THES, stating post concerned, and giving details of age, qualifications and experience to: Appointments Officer, Overseas Development Administration, Room 361, Abercrombie House, Eaglesham Road, EAST KILBRIDE, Glasgow G75 8EA.

**ODA OVERSEAS DEVELOPMENT**

Britain helping nations to help themselves

### CRIMINAL JUSTICE

University of Illinois at Chicago. *Subject to the availability of funds, the* Department of Criminal Justice is extending its search for two tenure track positions. 1) Researchand statistical methods. Responsible for teaching, undergraduate and graduate classes in research methods and statistics, including introduction to computer utilization. 2) Law and Society. Responsible for teaching undergraduate and graduate classes dealing with rules regulations, and laws as an aspect of social organization.

Qualifications: Ph.D. in relevant subject matter fields. For the law and society positions possession also of a J.D. will be viewed preferentially. Ability to teach at completion of degree requirements will be considered for a junior appointment.

Appointments will be either the assistant or associate professor levels. Send letter of application and names of at least three references to Dr. Joseph L. Peterson, Chair of Search Committee, Department of Criminal Justice, University of Illinois at Chicago, Box 4348 (m/c 141), Chicago, IL 60680. Closing date November 1, 1985.

The University of Illinois at Chicago is an Affirmative Action/Equal Opportunity Employer. (72120)

**Please note that *The THES* classified advertisement rates are to be increase from and including the issue of October 4, 1985. The new rates are as follows: Classified Display – £13.35 per single column centimetre Classified lineage and semi-display £2.58 per line.**

**Columbia University**

### Professorship with tenure (full or associate)

**in British history since 1760.**

Autumn term 1986 (or date to be arranged). Both undergraduate and graduate teaching, including dissertation sponsorship. Closing date for applications, October 29, 1985. Send letter of application and curriculum vitae to John A. Garraty, Chairman, Department of History, Box 33 Fayerweather Hall, Columbia University, New York, N.Y. 10027. AA/EOE (72151)

**UNIVERSITY OF CAPE TOWN**

### ARDERNE CHAIR OF ENGLISH LANGUAGE AND LITERATURE

Applications are invited for the above post, vacant from 1 January 1987. The University is seeking an outstanding scholar in the field of post-medieval literature who has a proven record of achievement in teaching and research, and who is capable of providing academic leadership.

Salary range. R34070-R40862 per annum Closing date for applications 31 October 1985

### LECTURER/ASSISTANT LECTURER OF INDUSTRIAL SOCIOLOGY AND LECTURER/ASSISTANT LECTURER IN SOCIOLOGY OR INDUSTRIAL SOCIOLOGY

Applications are invited for the above posts and both may be filled at either Lecturer or Assistant Lecturer level. Applicants for a post in Industrial Sociology should be familiar with South African labour history, contemporary industrial relations in South Africa and should have specialised knowledge of trade unions and labour studies in South Africa. Applicants for the post in Sociology should have a broadly based training in Sociology, and an ability to teach research methods would be a recommendation.

Salary ranged

Lecturer R17267-26889 per annum

Assistant Lecturer: R13395-19377 per annum

Applicants should state the level of post for which they are applying, and if applying for the Lectureship, indicate whether they would be prepared to be considered for an Assistant Lectureship. Closing date for applications: 31 October 1985.

### ASSOCIATE PROFESSOR/SENIOR LECTURER AND LECTURER IN THE DEPARTMENT OF ENVIRONMENTAL AND GEOGRAPHICAL SCIENCE

Applications are invited for the above currently vacant posts. Candidates should be well qualified in environmental evaluation, environmental education or African urbanisation. One of the posts also requires an interest and training in geomorphology or associated fields of earth science. Applicants for the Associate Professorship/Senior Lectureship must have a doctoral degree

Salary ranges

Associate Professor R28989-R35377

Senior Lecturer: R26403-R32763

Lecturer R17267-R26889

Closing date for applications: 25 November 1985.

An annual bonus and attractive staff benefits attach to the above posts. Applications should submit a full curriculum vitae and the names and addresses of three referees to the Registrar, (Attention: Appointments Office 8238) University of Cape Town, Private Bag, Rondebosch, 7700, South Africa. Further information may be obtained from the Registrar or The Secretary, SA Universities Office, Chichester House, 278 High Holborn, London WC1V 7HC. The University's policy is not to discriminate on the grounds of sex, race or religion. Further information on the implementation of this policy is obtainable on request. (72113)

**THE FACULTY** Exchange Center, a non-profit, faculty-administered program, helps arrange exciting exchanges on the college-university level and houses exchanges for study and travel for teachers and administrators at all levels of the education profession. The current roster of members will be made available to new members upon registration. For more information send a self-addressed envelope and 4 postal coupons to Faculty Exchange Center, 5855 Vipond Ave., Lancaster, Ca. 93534 U.S.A. 17603. (51763) H14

## Colleges and Departments of Art continued

### The Hampshire Consortium of Art, Design and Architecture

School of Design

Portsmouth

### LECTURER II GRAPHIC DESIGN

The successful applicant for this post will join a team of creative designers teaching Graphic Design within a corporate School of Design.

For further information Tel: Chris Haywood, Portsmouth 826435.

Application forms from the Registrar, Portsmouth College of Art, Design and Further Education, Winston Churchill Avenue, Portsmouth PO1 2DJ.

Closing date 14 days following 7th appearance of this advertisement. (72122)

**UNIVERSITY OF NATAL**

**Durban**

Applications are invited from suitably qualified persons regardless of sex, religion, race, colour or national origin for appointment to the posts of:

### D58/85 – PROFESSOR: Department of Philosophy

Preference will be given to a person trained in the analytical tradition and knowledgeable in the following fields

Philosophy of Literature, Philosophy of Science, Applied Ethics; Epistemology and Logic

A further advantage would be an interest in Phenomenology and Critical Hermeneutics, and Philosophy of Psychology.

The successful applicant will be expected to assume duty as early in 1986 as possible.

### D59/85 – PROFESSOR: Department of Nursing

Applicants for the post of Professor of Nursing should be qualified to teach and research in the field of Nursing and, in application for the post, should indicate *clearly their teaching and research interests.* Registration with the SA Nursing Council in General Nursing is mandatory for the post and Midwifery, Nursing Administration, Nursing Education, Community Nursing and Psychiatric Nursing are desirable recommendations.

The appointments carry attractive salary packages, details of which are obtainable from the Staffing Section on request. The salaries offered will be determined according to the qualifications and/or experience of the successful applicants

Application forms, further particulars of the posts and information on pension, medical aid, group insurance, service bonus, staff bursary, housing loan and subsidy schemes, and travelling expenses on first appointment are obtainable from the Secretary, South African Universities Office, Chichester House, 278 High Holborn, London WC1V 7HE or the Registrar, University of Natal, King George V Avenue, Durban, 4001, with whom applications, on the prescribed form, must be lodged not later than 15th November 1985, quoting the relevant reference number. (72114)

**Capricornia Institute of Advanced Education Rockhampton James Goldston School of Engineering**

Queensland, Australia

### HEAD

Department of Mechanical Engineering

The Position:

The Head will provide overall academic and administrative leadership in the Department. The School of Engineering has departments of Mechanical, Electrical and Civil Engineering and offers undergraduate and undergraduate degree programs as well as post-graduate and associate diploma courses, both full-time and part-time study. The school's philosophy is to offer modern and practical professional courses and to have strong links with industry.

Qualifications:

Substantial experience in Tertiary Education.

A background in Applied Research and/or Industry.

Post-graduate qualifications.

General Information:

Capricornia Institute is a college of advanced education with five schools in business, education, engineering, humanities and social sciences, and science. It offers bachelors degrees and a number of graduate and associate diplomas to approximately three thousand students studying both internally and externally. A school of nursing studies will be established in the next triennium. Distinction in applied research and development work and service to region are inscribed objectives.

Rockhampton, situated on the tropic of Capricorn, is the service centre of a large region where rural and industrial technology-based development is taking place. The city has a population of 35,000 and is within easy reach of the islands of the Southern Barrier Reef.

Salary: 46,397 Australian Dollars per annum.

Further information available from the Australia Centre, 3/293-295 Strand, London, WC2R 0LZ. (Tel: 01-836 1333).

To apply: Applications including a full curriculum vitae, certified copies of qualifications and the names, addresses and telephone numbers of three referees should reach the Personnel Officer, Capricornia Institute of Advanced Education, Rockhampton, Queensland, Australia, 4700 by 18th October 1985. (51886) H14

**THE UNIVERSITY DE LA ROMANDE** a private non-traditional Swiss University, seeks highly qualified experimental Advisers to read and comment on students' Thesis. All work is in English and in a variety of disciplines. Full details, including fees, from Neil Gibson and Company, 37 King Street, Sudbury, Suffolk. Please mark envelope "Advisers". (51893) H14